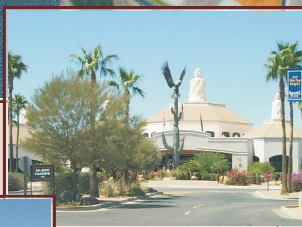
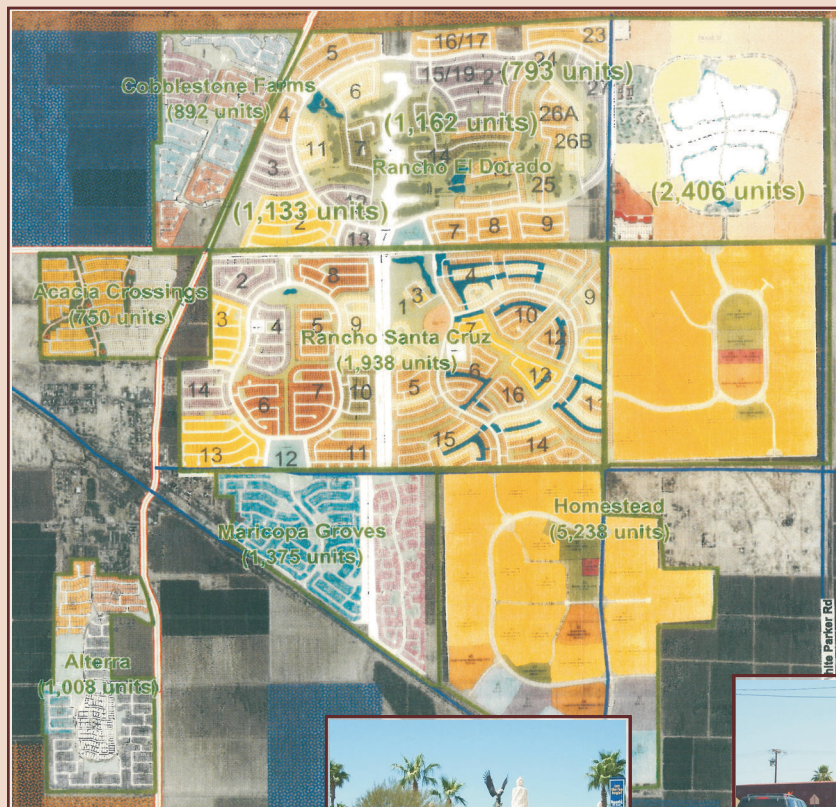




CITY OF MARICOPA

SMALL AREA TRANSPORTATION STUDY

FINAL REPORT



LIMA & ASSOCIATES
Transportation - G.I.S.

JULY 22, 2005

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1. INTRODUCTION

This document presents the Transportation Plan for the City of Maricopa as a result of the Small Area Transportation Study conducted between November of 2004 and May 2005. The study was developed by the City of Maricopa cooperatively with the Arizona Department of Transportation (ADOT), The Gila River Indian Community (GRIC), Ak-Chin Indian Community, Pinal County, and the City of Casa Grande. In addition, area residents and stakeholder input was solicited and incorporated in the study through public participation efforts.

REPORT ORGANIZATION

This report is structured in seven chapters. Following the introduction chapter, the second chapter presents a discussion of the existing and future conditions in Maricopa. The study vision and supporting goals are presented in the third chapter. The fourth chapter documents the evaluation of alternative roadway networks and chapter five presents the street plan and priorities. Chapter six presents the multimodal plan. Guidelines for railroad crossings and access management are presented in chapter seven. Chapter eight documents the implementation strategies and recommendations, including applicable funding sources and estimates as well as implementation experiences of Arizona peer cities.

Stakeholder workshops and Public Open Houses are documented separately in the following documents:

- First Stakeholders Meeting, December 16, 2004
- First Public Open House, February 9, 2005
- Second Stakeholders Meeting, April 13, 2005
- Second Public Open House, April 28, 2005

BACKGROUND

The City of Maricopa is located in Central Arizona roughly 35 miles south of Phoenix and 20 miles northwest of Casa Grande. The City recently incorporated and has a long history tied to travel, transportation, and agriculture. Currently, the City is the fastest growing community in Arizona and is experiencing unprecedented growth. Population rose from 1,482 residents in 2000 to 4,998 in 2004, and is expected to reach 24,000 by 2005; 60,000 by 2010; and 179,000 residents in 20 years. In effect, the urban sprawl of the Phoenix metropolitan is leaping over the Gila River Indian Community and taking root in Pinal County. Currently, Maricopa is issuing about 300 building permits every month. A multitude of home builders are developing land within the city limits and more than 80,000 homes have been platted and approved within city limits. Major projects are also starting up outside the city limits.

PURPOSE

The rapid growth has occurred without the guidance of a General Plan or Transportation Plan. Thus, this plan will aid the City in addressing the challenge to plan and implement a transportation system around already planned development. Moreover, the transportation system will be defined within physical constraints such as major washes and the Union Pacific Railroad (UPRR) tracks, as well as crossing the two Native American communities. The plan presents goals, strategies and facilities to accommodate current and future travel demand in order to develop an efficient multimodal transportation system.

STUDY AREA

An overview of the City of Maricopa Small Area Transportation Study is presented in Figure 1, which shows the City limits. Additionally, private lands south of the Union Pacific Railroad tracks and north of the Ak-Chin Community plus the University of Arizona farm area were included for travel demand modeling purposes. Figure 2 illustrates the regional context of the City in respect to other communities in Pinal County as well as Maricopa County and Pima County. Concepts for regional connections to Maricopa were also considered in the study.

FIGURE 1. STUDY AREA

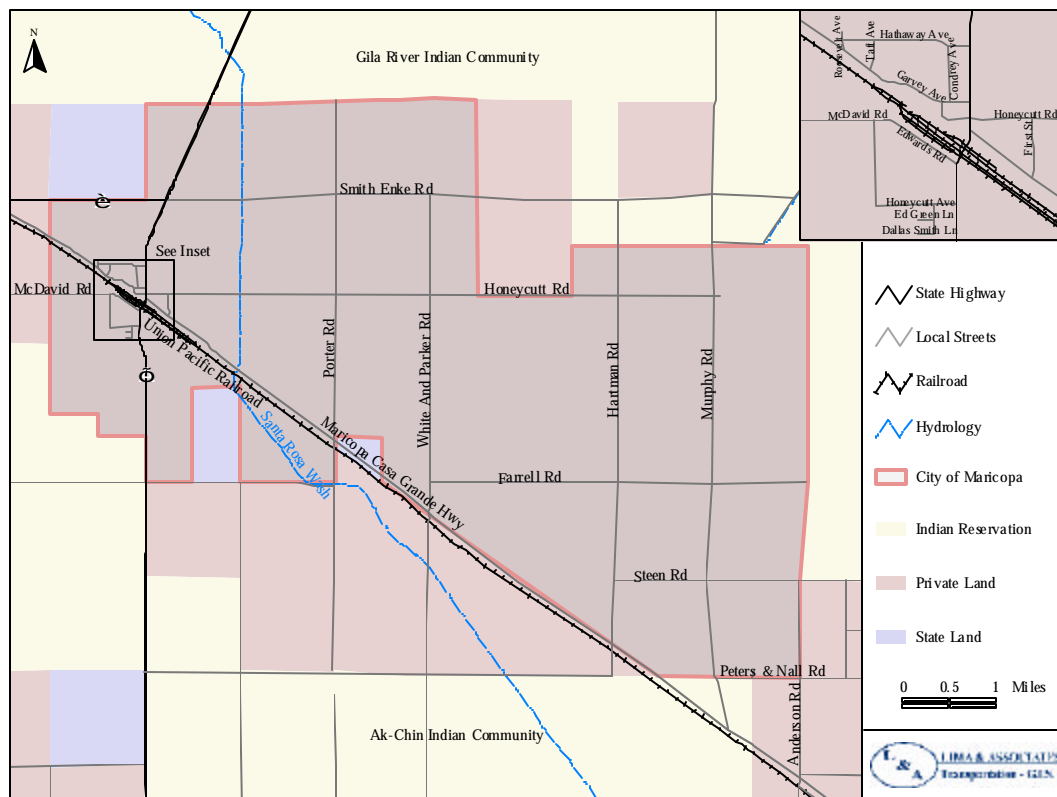
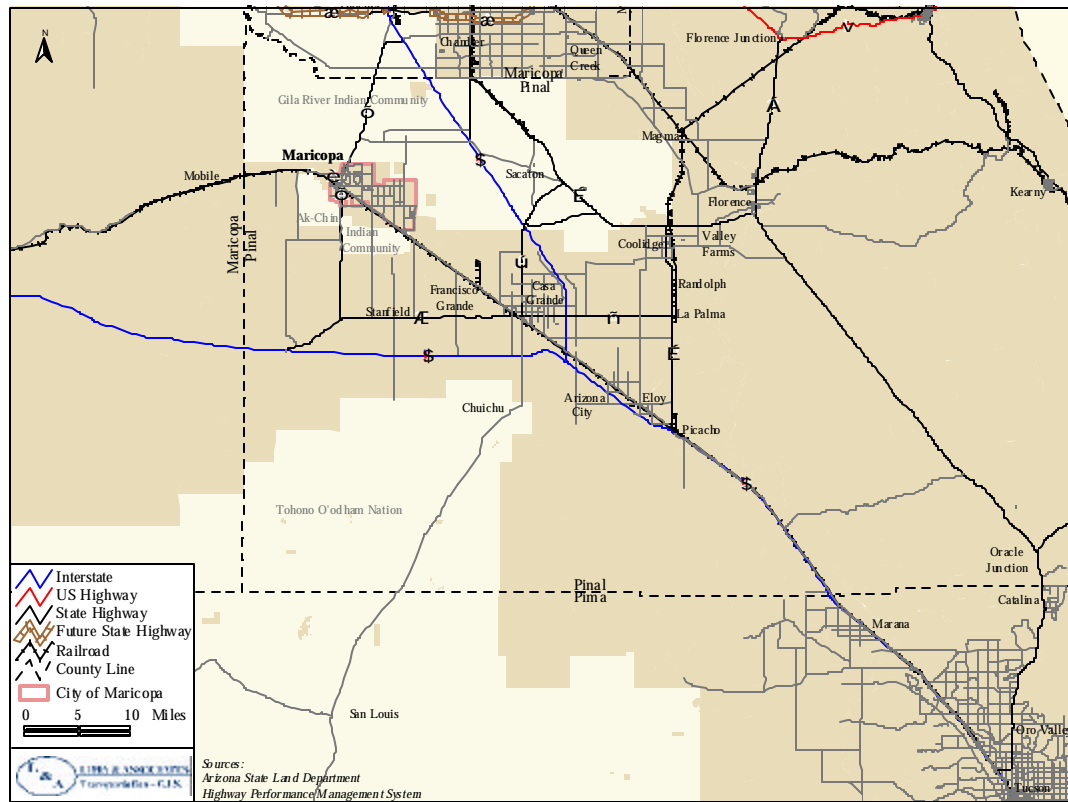


FIGURE 2. CITY OF MARICOPA IN REGIONAL LOCATION

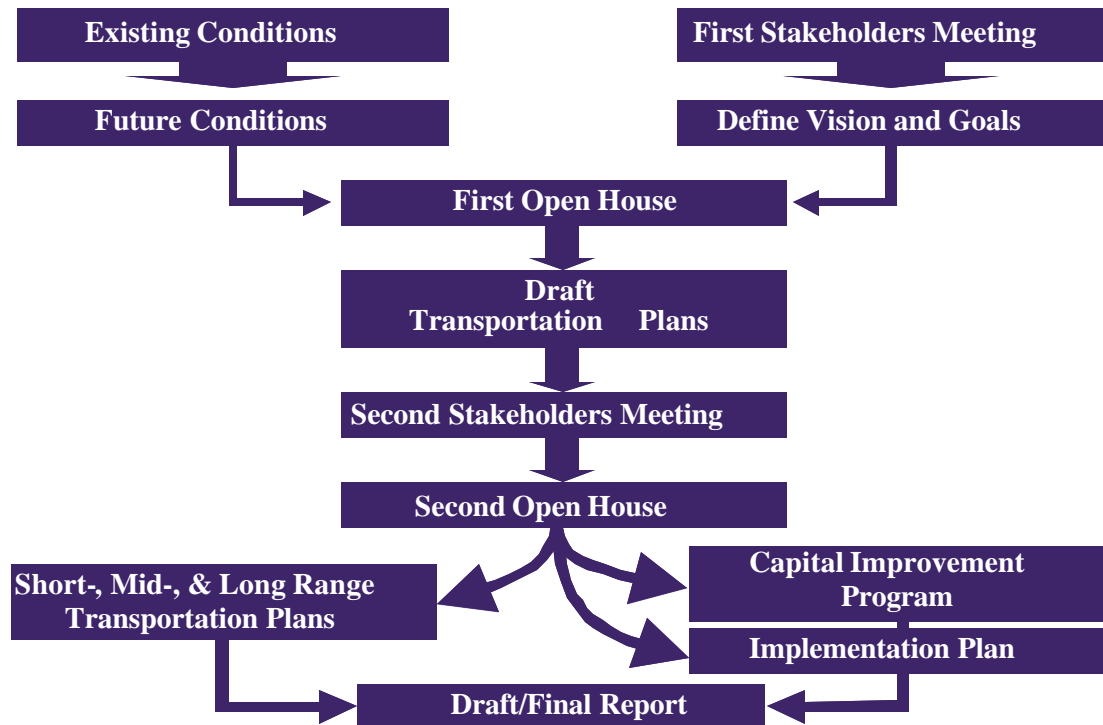


STUDY PROCESS

The study process is illustrated in Figure 3. The study was guided by a Technical Advisory Committee comprised of representatives from the City, ADOT, Pinal County, City of Casa Grande, Central Arizona Association of Governments (CAAG), GRIC, and Ak-Chin Reservation. An intensive public participation process was undertaken including two rounds of stakeholder meetings and open houses to identify issues, solicit comments, and receive feedback on the study process and recommendations.

The first step of the technical analysis was to analyze the existing conditions. A first stakeholder workshop was held to identify issues and vision components for the transportation plan. Stakeholders included City Council members, city staff, County representatives, jurisdiction representatives, Native American community representatives, and developer representatives. An Open House was then held with the general public to present existing conditions, issues, and transportation vision. The next major step in the technical process was to analyze alternative roadway improvements. Based on the results of this analysis, a draft transportation plan was developed including a transit element. A second stakeholder workshop was held to review the draft transportation plan and identify constraints to the plan. The draft transportation plan was then presented to an Open House of the general public as well as the City Council.

FIGURE 3. STUDY PROCESS



2. SUMMARY OF EXISTING AND FUTURE CONDITIONS

The following section summarizes the findings of the existing and future conditions inventory. Working Paper 1 presents a detailed inventory of existing and future conditions and reviews the previous studies and plans.

CURRENT SOCIOECONOMIC CONDITIONS

The special census conducted for Maricopa in March 2004 tabulated the total population within the City of Maricopa as 4,998 residents with a median age of 28.2. A total of 2,153 housing units were recorded by the special census, with an average household size of 2.8 persons. The minority population was tabulated as 41 percent; of which 31 percent were Hispanic or Latino. The earlier 2000 Census indicated that 18.8 percent of the population was below the poverty level. The population as of December 2004 is estimated between 9,000 and 10,000 residents.

Environmental Justice Considerations

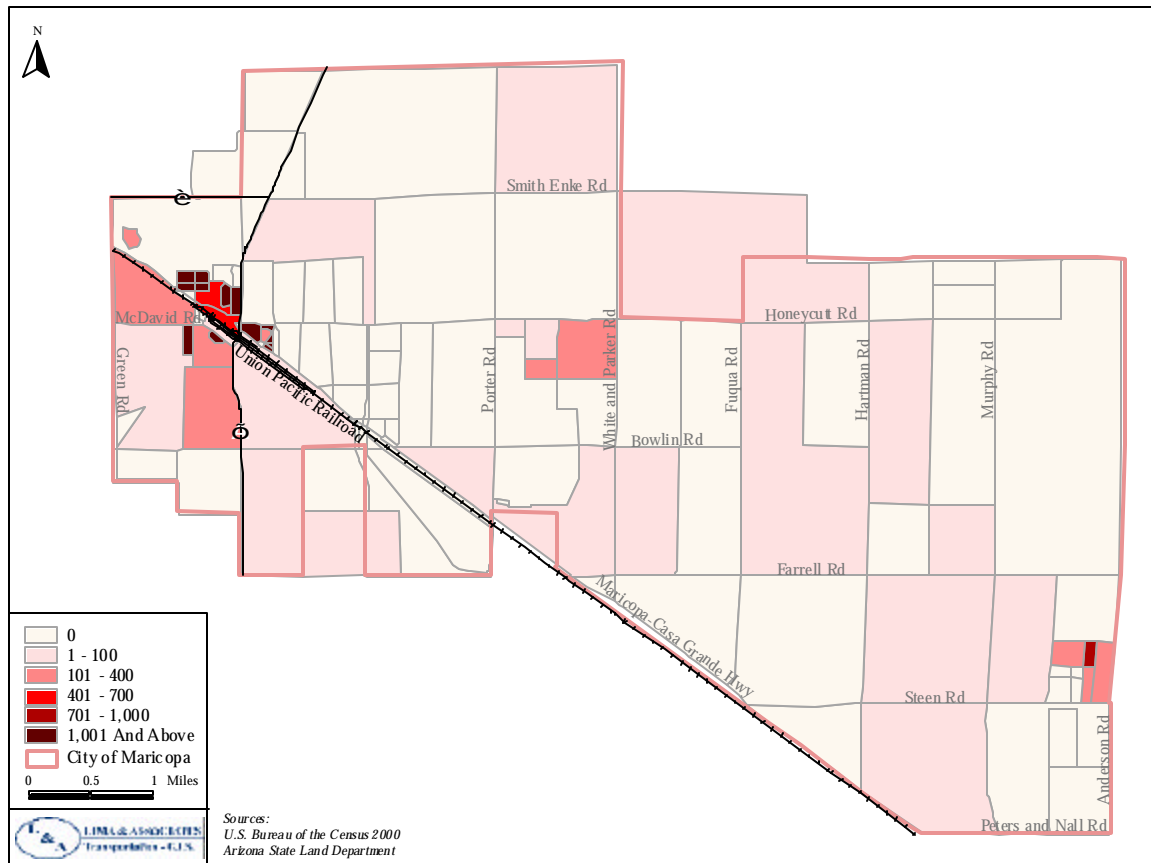
The City of Maricopa developed around the intersection of SR 347 and Maricopa-Casa Grande Highway as a typical farm community characterized by service industries and agricultural production. Next to the City, two wildcat subdivisions exist at the vicinity of Anderson and Steen Roads and Honeycutt and White and Parker Roads. A detailed discussion on the past, current and future City population is provided in the inventory of existing and future conditions working paper. Major findings in regard to environmental justice are based on the Census 2000:

- The percentage of minorities within the census blocks of the City of Maricopa was close to 50 percent. (See Figure 4.) The percentage was considerably higher than in Pinal County or the State of Arizona.
- In 2000, the population of Maricopa was on average much younger than the State's or County's populations.
- The population percentage for the "below poverty" group was 18.08 percent in the City of Maricopa, almost one-third more than the statewide proportion.
- The percentage of mobility-limited persons was considerably higher than the State or County percentage.

With the influx of new residents to Maricopa, the demographic composition of Maricopa changed dramatically as documented by the 2004 special census. The population composition becomes more that of a suburban bedroom community of a large metropolitan area. The relative proportion of minority populations within Maricopa will diminish with the influx of

additional residents. However, the population segments documented in the 2000 census will most likely remain in Maricopa. One could argue that the hyper-growth currently taking place poses a disproportional impact on the original population of Maricopa. In developing the transportation system for the emerging suburban bedroom community, consideration should be given to the mobility needs of the initial population. In particular, the suggested transit improvements in this plan will address some of the specific transportation needs.

**FIGURE 4. CENSUS 2000 MINORITY POPULATION
(BY CENSUS BLOCK PER SQUARE MILE)**



NATURAL ENVIRONMENT

The City of Maricopa is located on flat terrain in the Sonoran Desert at an elevation of about 1,200 feet. The predominant native vegetation is the Lower Colorado River Sonoran Desert Scrub. Historically, the area was used intensively for agriculture. Agricultural usage included feed lots, pecan groves, and irrigated farming. There are no designated wilderness areas within the vicinity of the City.

An inquiry with the Arizona Game and Fish Department regarding Special Status Species revealed that the Western Burrowing Owl inhabits the vicinity of the study area. However, there are no proposed or designated critical habitats in the vicinity of the City. Two major washes cross the study area in a northwest direction: Santa Rosa and Santa Cruz

Wash. The Santa Rosa Wash is a 51-mile long stream draining an area of 683 square miles. Santa Cruz Wash continues southeast to eventually become the Santa Cruz River. Vegetation in the Santa Rosa Wash watershed is sparse to medium density, consisting of various types of cacti, sagebrush, greasewood, and small trees such as mesquite and palo verde. Areas with perennial grasses exist at the higher elevations and covers of annual grasses occur in much of the basin after the winter rains. There are no riparian areas in the vicinity of the corridor.

The Santa Rosa Wash creates a barrier for traffic within the City and is incorporated as a green belt in the existing developments. Only two bridges, one on Smith-Enke Road and the other one on Maricopa-Casa Grande Highway, cross the wash. In addition, the current crossing of the Santa Cruz Wash and Maricopa-Casa Grande Highway is situated on land within the Ak-Chin reservation.

Except for underground storage tanks within the City, no hazardous sites are within the study area. However, the landfill operation in Mobile, Arizona (approximately, 20 miles to the west) impacts the City of Maricopa through heavy truck traffic. Numerous trucks are transporting waste from the Phoenix Metro area to the landfill via SR 347 and SR 238.

All of Pinal County is at risk of becoming a non-attainment area for PM₁₀, especially with agriculture activities such as tillage, harvesting, and cattle feedlots that produce fugitive dust emissions. Fugitive dust is also caused by wind erosion of disturbed surface material from agricultural fields, undisturbed vacant land and desert, and fluvial channels. In addition, increases in vehicle traffic as well as construction activity will likely increase fugitive dust emissions from both paved and unpaved roads; this is particularly true in places like Maricopa.

In 2002, there was one exceedance of eight-hour ozone recorded by the Queen Valley monitor, and the monitoring site at Casa Grande (Eleven Mile Corner and Stanfield) recorded high levels of PM₁₀. Other monitoring sites in the western portion of the County have also recorded high levels of PM₁₀.

CURRENT TRANSPORTATION CONDITIONS

Roadways

The current arterial roadway network is not fully developed, primarily comprised of unpaved one-mile section line roads. The following lists some of the major constraints:

- The Santa Rosa Wash and Santa Cruz Wash are barriers to circulation.
- The development encroaches onto existing roadway ROW, as well as Indian Reservation boundaries.
- The Maricopa-Casa Grande Highway is paralleled by the UPRR tracks and runs diagonally to the section line roads. This results in numerous railroad crossings and roadway intersections that are not 90 degrees.

- Many roadways are currently impassable when flooding occurs.
- No developed collector roadway system exists. Many of the existing, as well as planned developments have uncoordinated collector systems with frequently offset collector roads from one development to the next.
- Currently, there are no major projects programmed by ADOT or by Pinal County within the city limits.
- Safety is becoming an issue and accidents are increasing. Four fatalities have occurred on State Route 347 and 238 in the last five years.

Current Alternative Modes

No continuous system of pedestrian, bicycle, or equestrian facilities currently exists within city limits. No local or regional bus lines operate within city limits. The closest Greyhound bus station is in Casa Grande, and the closest taxicab companies serve Maricopa from Chandler or Casa Grande. One shuttle service operates on an on-call basis from the Maricopa Amtrak station to the metropolitan Phoenix area. No agencies currently exist within the City that provide transportation services to special needs groups such as seniors or persons with disabilities.

Rail Freight Service

The Union Pacific Railroad parallels the Maricopa-Casa Grande Highway in the study area. According to the railroad itself, up to 55 freight trains operate through Maricopa daily. Many of these trains are over a mile long. Union Pacific expects the number of daily trains to reach 70 within five years and 80 by 2013.

Since the highway parallels the Maricopa-Casa Grande Highway, numerous railroad crossings exist and roadway intersections are located close to the railroad. Many of the intersecting roadways will carry high traffic volumes in the near future and safe solutions to the railroad crossings need to be developed. Crash analysis conducted for this study revealed that accidents have occurred at the crossing of SR 347 and the UPRR tracks.

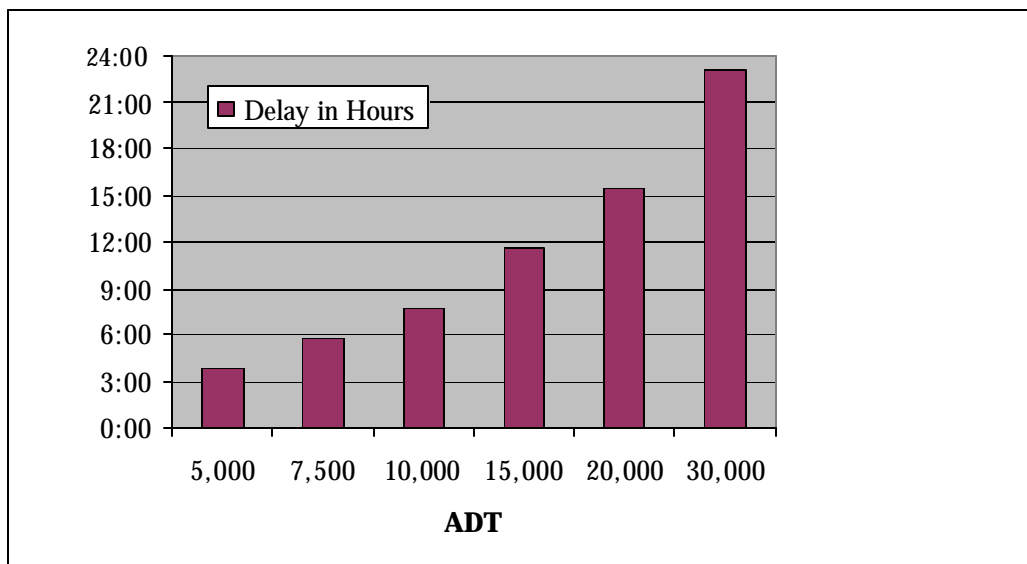
Amtrak Service

Amtrak's Orlando-Los Angeles Sunset Limited has a scheduled stop in Maricopa. The train operates three days per week in each direction, but is rarely on schedule. The train is typically much longer than the station platform and must stop several times to let passengers on and off, blocking traffic on SR 347 for up to 15 minutes total. Amtrak does not keep the Maricopa Station open for extended hours. Amtrak has recently changed the schedules so that the eastbound train departs Maricopa at 11:17 p.m. and the westbound train departs at 2:32 a.m. The station is open overnight only.

SR 347/UPRR Crossing

SR 347 crosses the UPRR tracks at-grade in Maricopa. Honeycutt Road and the Maricopa-Casa Grande Highway nearly converge just north of the railroad. The Maricopa-Casa Grande Highway is about 260 feet north of the crossing and Honeycutt Road is 620 feet north of the crossing. Both intersections will most likely need to be signalized in the near future. Freight trains crossing SR 417 cause significant vehicle delay throughout the day. Figure 5 illustrates the expected total daily delay in hours as average daily traffic (ADT) increases on a roadway with the current train operations.

FIGURE 5. POTENTIAL DELAY CAUSED BY CLOSING OF RAILROAD CROSSING

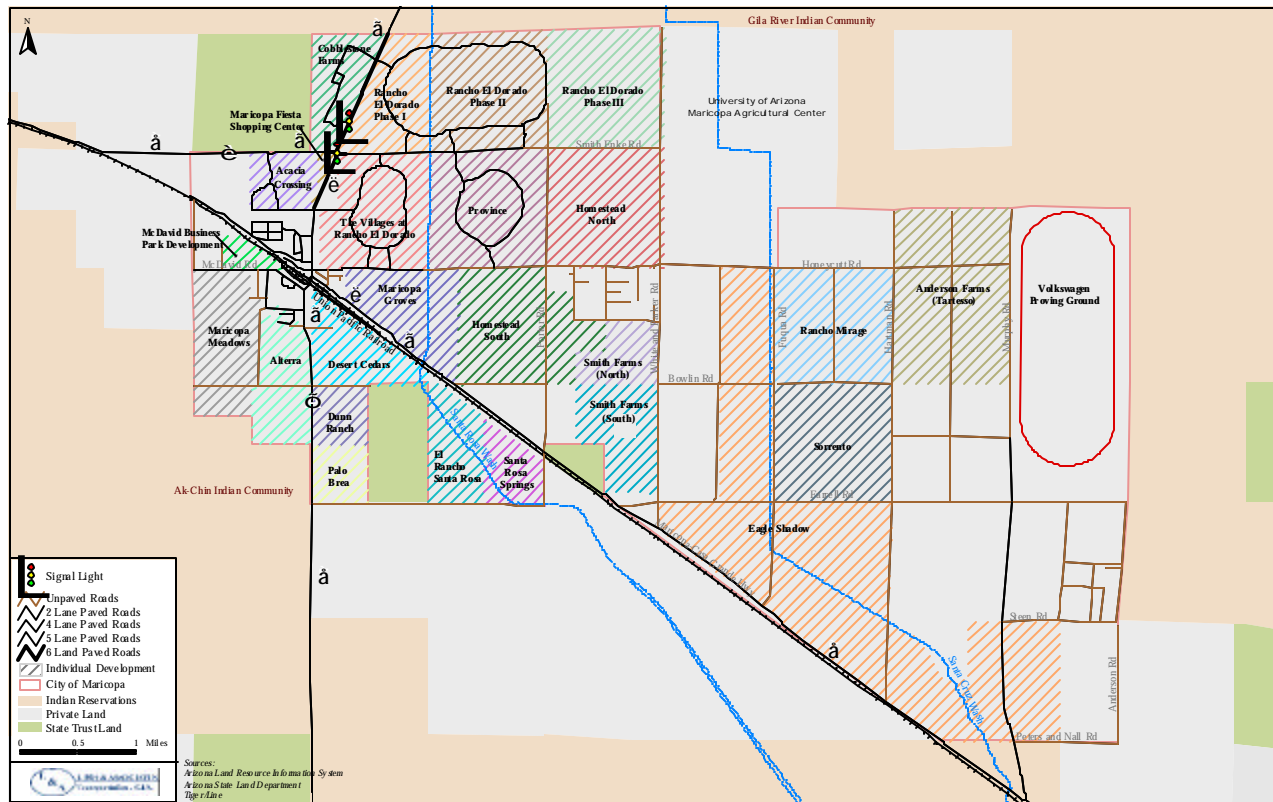


FUTURE POPULATION AND EMPLOYMENT

For most of the City, development plans are approved and in place. Figure 6 presents the approved developments within the study influence area. Maricopa is projected to experience explosive growth with more than 4,000 new dwelling units (DUs) per year. The City is developing at a density of 1,900 to 2,200 DUs per sq mile. By 2020, an estimated 64,000 DUs will exist, resulting in housing 179,000 residents, and there will be a total of 36,498 jobs in the model area. Since March 2005, the City has issued more than 500 building permits each month.

In 2001, total employment was approximately 2,400—corresponding to 306 jobs per 1,000 residents, 35 to 40 percent less than the national and state averages. Contributing to this low per capita figure was the large number of Maricopa residents who commuted to another community to work.

FIGURE 6. APPROVED DEVELOPMENTS

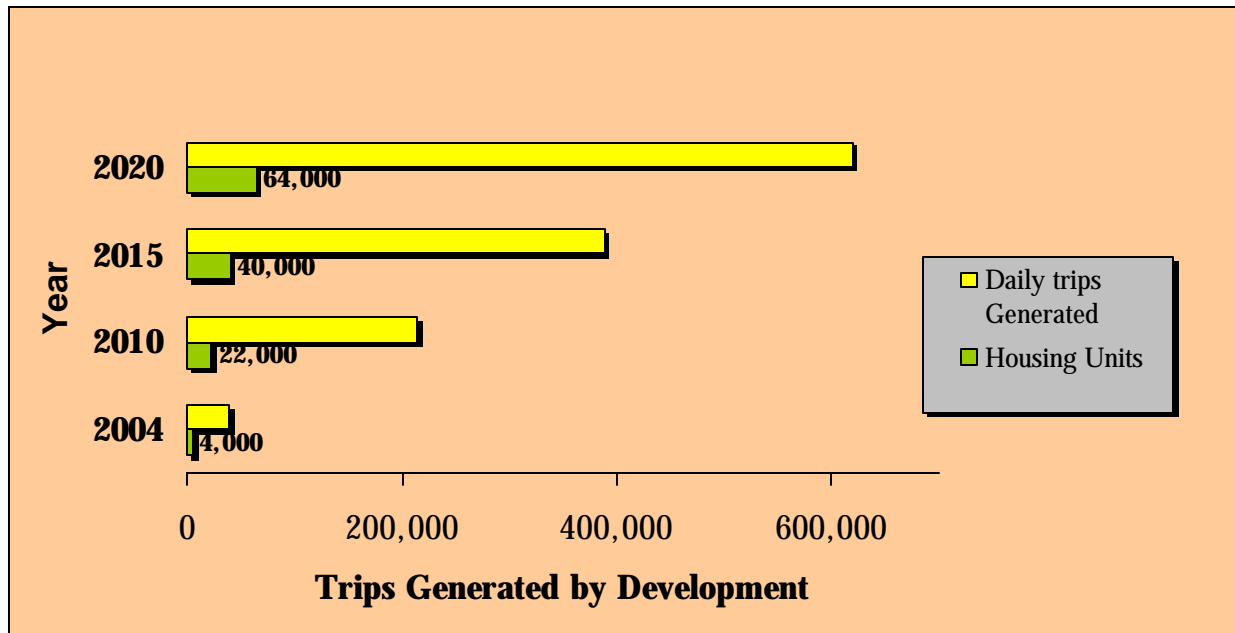


FUTURE YEAR TRAFFIC DEMAND

Several studies have been undertaken in previous years and have forecasted traffic in the area of Maricopa. The projected traffic volumes of these previous studies vary greatly, but all indicate the need for major facilities within the city limits and especially for the regional connections. Travel demand under build-out conditions is expected to grow in excess of the roadway capacity.

This study developed a travel demand model for the study area and was used to evaluate various future circulation system alternatives proposed for the City of Maricopa. For estimating future daily traffic volumes, the number of daily vehicle trips was first estimated based on the projected number of dwelling units. The future travel demand was estimated assuming the 2020 socioeconomic data of approximately 64,000 DUs, equivalent to 176,000 residents. Figure 7 illustrates the estimated daily trips generated by the projected development between 2004 and 2020, indicating that 640,000 trips will be generated by 2020.

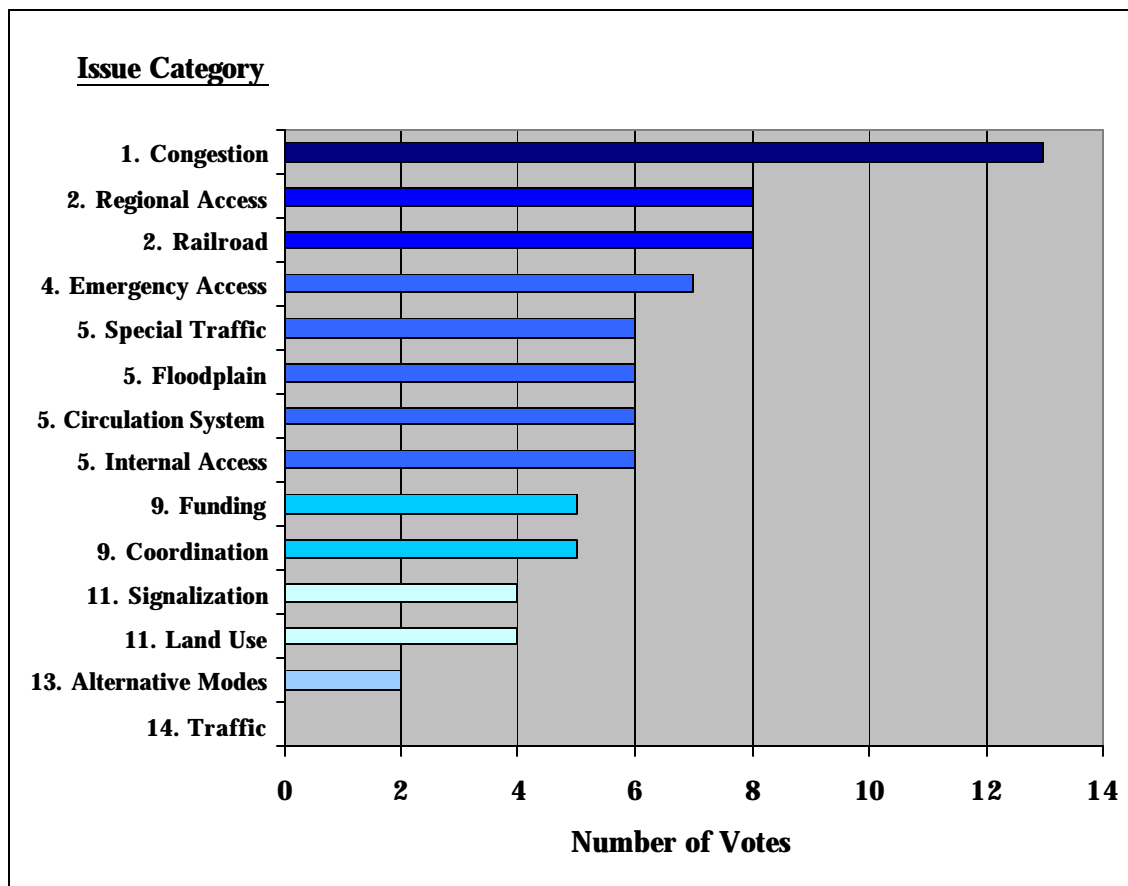
FIGURE 7. DAILY TRIPS GENERATED BY DEVELOPMENT



3. VISION AND GOALS

As previously noted, intensive public participation was conducted to identify issues and potential transportation solutions. The first stakeholder workshop was held to identify transportation related issues and components of a transportation vision for the City. These issues and components were presented to the public at the first Open House meeting. Figure 8 presents the issue categories identified through the public participation effort. The top four issues that were identified by the stakeholders were congestion, regional access, railroad crossings, and emergency access.

FIGURE 8. ISSUES IDENTIFIED AND PRIORITIZED THROUGH PUBLIC PARTICIPATION EFFORT



VISION

Based on the input received from the public a vision and supporting goals were identified. The following vision statement summarizes the overall direction of the transportation system development.

The Transportation Plan will be developed in cooperation with the City, federal state, local jurisdictions, tribal governments, residents, and businesses. The City's transportation system will be efficient and safe. The City will be served by a hierarchy of [freeways], arterials, collectors, and local streets for all modes of transportation within the City and accessibility to regional activity centers. A multimodal circulation system will serve pedestrians, equestrian riders, bicyclists, automobiles, and transit service for residents and businesses. Alternative routes and transit services will be provided connecting the City with Phoenix, Tucson, and Casa Grande. Transportation facilities will have a consistent design with landscaping that is aesthetically pleasing.

The transportation vision for the City guided the development of the transportation plan and implementation plan.

GOALS

In order to implement the vision for Maricopa's transportation system, several goals have been identified.

Circulation Goal: Provide free-flowing and safe overall circulation that provides internal and regional accessibility with alternate routes identified.

Quality of Life Goal: Establish consistent route and landscape standards that incorporate aesthetics to develop a community that is clean and presentable.

Coordination Goal: Coordinate and cooperate with other jurisdictions and agencies, including ADOT, Pinal County, GRIC, City of Casa Grande, Ak-Chin, Maricopa County, MAG, and CAAG.

Integration of Land Use and Circulation Goal: Promote a multimodal transportation system capable of accommodating anticipated travel demands of current, proposed, and future land uses.

Public Transportation Goal: Provide or facilitate the provision of local and regional public transportation service in areas or markets where unmet transportation needs will exist at buildout.

Bicycle and Pedestrian Goal: Integrate the needs of bicycles and pedestrians when planning and constructing the street network, including bicycle lanes, sidewalks, and off-street trail systems.

4. ALTERNATIVE EVALUATION

This chapter presents the results of the evaluation of three alternative roadway networks for the City of Maricopa. The “Base Future” roadway network is the roadway network that would be constructed as part of the approved development. The “Ideal Arterial” considers more extensive improvements to arterial roadways, and the “Ideal Arterial + Regional Connections” adds additional regional connections to areas outside of the City.

Each alternative configuration was evaluated using the travel demand model with 2020 socioeconomic conditions and various roadway and lane configurations for each scenario. Daily traffic volumes were projected for each alternative network and the level of service (LOS) of the roadways was estimated for each network. Level of service is a qualitative measure in terms of factors such as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Level of service ranges from LOS A to LOS F, where LOS A represents a free flow traffic condition and level of service F represents a congested traffic condition. In an urban area, the acceptable level of service is between LOS C and D.

The following discusses the characteristics of the three alternative roadway networks and the result of the evaluation for each alternative.

BASE FUTURE ROADWAY NETWORK

A “Base Future” network was defined as the roadway network resulting from the approved development. The base future network has several constraints including:

- Discontinuous section line roads (i.e. Steen Road, Farrell Road, and Bowlin Road)
- No roadway on Fuqua Road Alignment
- Discontinuous Green Road
- Railroad crossings at SR 347, Porter, White and Parker, and Hartman Roads
- No railroad crossings on most of the east-west arterials

All section line roads were assumed to be four-lane arterial streets with a speed of 35 miles per hour, except for SR 347, which was coded as a six-lane arterial in the northern portion with a speed of 45 miles per hour. The Maricopa-Casa Grande Highway was coded as a four-lane arterial with a speed of 45 mph.

Results

Daily traffic volumes from the Base Future model assignment are presented in Figure 9. In general, the base future roadway network capacity is in most places insufficient for the traffic volumes generated within the City as well as traffic entering and traveling through the City. Major findings include:

- SR 347 carries between 60,000 and 70,000 vehicles per day (vpd) south of the railroad tracks on a four-lane cross section. In the immediate vicinity of the railroad tracks, volumes reach 100,000 vpd. North of the railroad tracks, SR 347 as a six-lane facility carries between 80,000 and 90,000 vehicles.
- Maricopa-Casa Grande Highway carries up to 60,000 vpd.
- North-south arterials crossing the railroad tracks carry additional traffic diverted from SR 347, reaching volumes of 66,000 vpd on Porter Road south of the railroad to 57,000 vpd on White and Parker Road south of the Railroad.
- East-west arterials are in some cases discontinuous and are not crossing the railroad tracks.
- Honeycutt Road in the northern portion of the City carries an excess of 40,000 vpd.
- Peters and Nall Road, the most southern east-west arterial, carries unusually high volumes for being on the perimeter of the model area. The model assigns vehicle trips that cannot be accommodated on SR 347 to Peter and Nall Road and distributes them to the north-south arterials.
- Most roadways, particularly the major thoroughfares, operate at a LOS E and F as shown in Figure 10.

IDEAL ARTERIAL

In analyzing the modeling results for the “Base Future,” it became apparent that the land uses forecasted would generate traffic in excess of the roadway capacity provided in the base future network. The Ideal Arterial scenario was developed in an iterative process in order to mitigate the observed deficiencies. The Ideal Arterial alternative was analyzed with the same socioeconomic data set as the Base Future network; however; this alternative differs from the base future using the following assumptions:

- Most arterials are coded as six-lane facilities including SR 347 and Maricopa-Casa Grande Highway
- East-west arterials are connected across the railroad
- Additional north-south arterials crossing the railroad
- Maricopa-Casa Grande Highway and Honeycutt Road are merged east of SR 347
- Updates to network based on development plans (i.e. parallel road to Maricopa-Casa Grande Highway)
- Completion of grid system

Results

Daily traffic volumes from the Ideal Arterial alternative model run are shown in Figure 11. Traffic appears to be distributed more evenly under the Ideal Arterial scenario, thanks to greater connectivity and more overall capacity. Other major findings include:

- East-west and north-south arterials generally carry less traffic because of additional roadways and connecting segments than in the Base Future.
- Volumes on SR 347 (70,000 and 80,000 vpd) and Maricopa-Casa Grande Highway (50,000 – 80,000 vpd) are higher than in Base Future because of added capacity.
- At the intersection of Honeycutt Road and SR 347 major traffic volumes converge: about 90,000 vpd on Honeycutt and around 84,000 on SR 347.
- Level of Service for most roads under this scenario improve to LOS C or better; however, major roads including SR 347 and the Maricopa-Casa Grande Highway are operating at a LOS E and F, as shown in Figure 12.

Nevertheless, overall performance improved the two main thoroughfares. Still, SR 347 and Maricopa-Casa Grande Highway do not operate at an acceptable level. Improvements to both roadways only can be achieved by providing additional regional connection together with distributing traffic onto other roadways within the network.

IDEAL ARTERIAL + REGIONAL CONNECTIONS

The Ideal Arterial + Regional Connections also utilize the same socioeconomic data set as the Base Future and nearly the same roadway network as the Ideal Arterial. Differences in the road network include the following:

- Higher level arterials:
 - North-south: Murphy Road, White and Parker Road, SR 347/Green Road extended
 - East-west: Bowlin Road and Peters and Nall
- White and Parker as additional north-south connection
- Extension of Honeycutt/Bowlin Road east
- Extension of Smith-Enke Road north-east

Results

The daily traffic volumes from the Ideal Alternative + Regional Connections model assignment are shown in Figure 13. Traffic volumes are substantially reduced on SR 347 and Maricopa-Casa Grande Highway and lower also on the arterial system. These volumes appear to be distributed instead to the various regional facilities. Other major findings include:

- The Parkway facilities carry up to 70,000 vpd on Bowlin Road, and 60,000 vpd on White and Parker Road.
- Intersection volumes on SR 347 and Honeycutt are reduced to 47,000 vpd on SR 347 and 60,000 vpd on Honeycutt.
- Level of service, as shown in Figure 14, is generally improved for the network, in particular for SR 347 and Maricopa-Casa Grande Highway.

ALTERNATIVE NETWORK COMPARISON

The alternative network concepts were also presented at the second round of stakeholder and public meetings. Comments and feedback received were incorporated in the development of the street system plan presented in the next chapter. Alternative roadway networks were measured against a set of evaluation criteria and compared as shown in Table 1.

TABLE 1. ALTERNATIVE NETWORK COMPARISON

	Base Future	Ideal Arterial	Ideal Arterial + Regional Connections
Traffic Volumes	High	High	High
Traffic Distribution	Poor	Better	Best
Average Level of Service	F	D	C
Average Speeds	Low	Medium	High
Safety Concerns	High	Medium	Medium
Traffic Operations	Poor	Poor	Best
Environmental Concerns	High	Medium	Medium
Community Support	Low	High	Medium
Social Disruption	High	High	Medium
Cost to Implement	Medium	High	High

FIGURE 9. 2020 BASE FUTURE TRAFFIC VOLUMES (VPD)

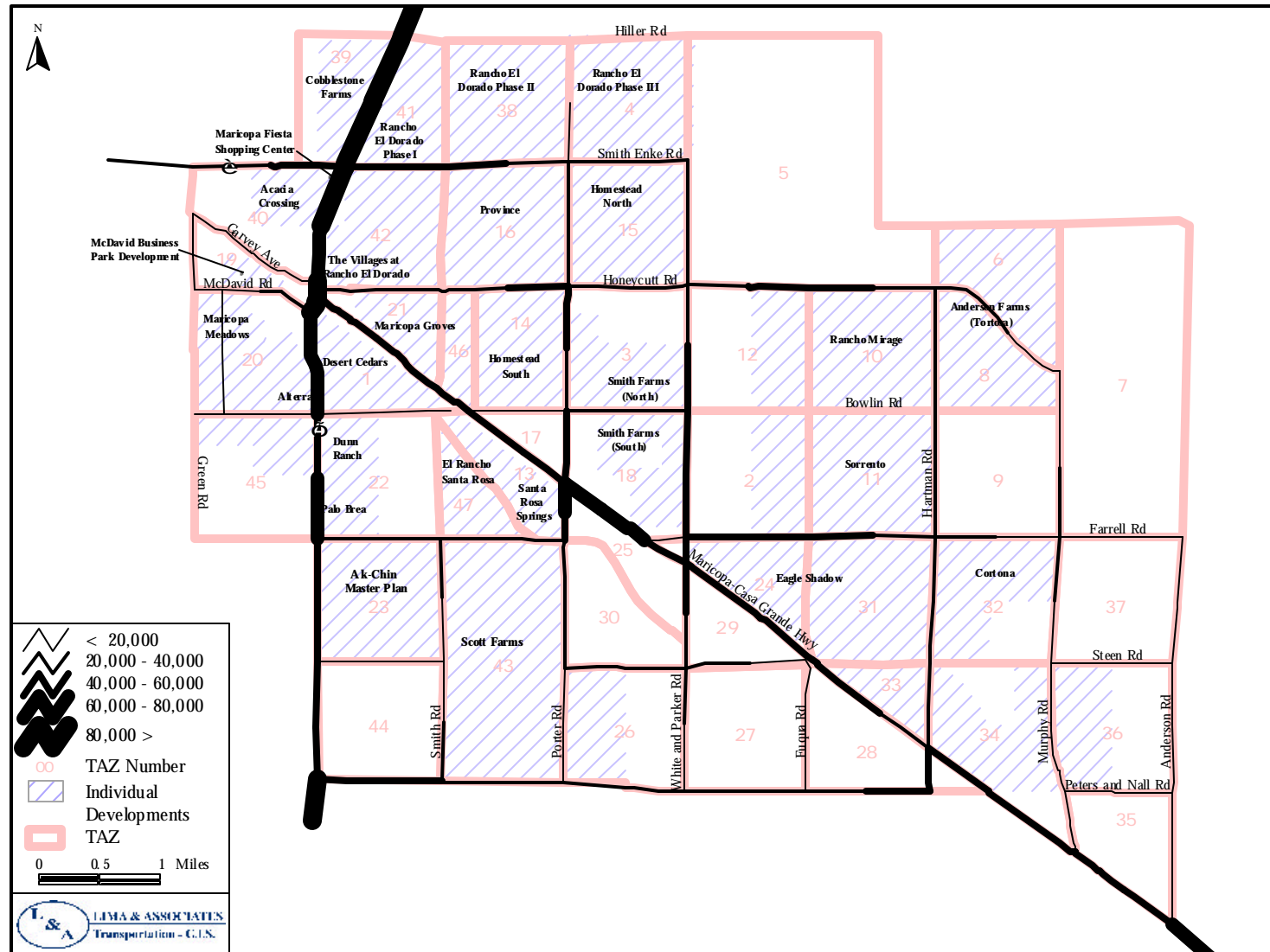


FIGURE 10. 2020 BASE FUTURE MODEL LEVEL OF SERVICE

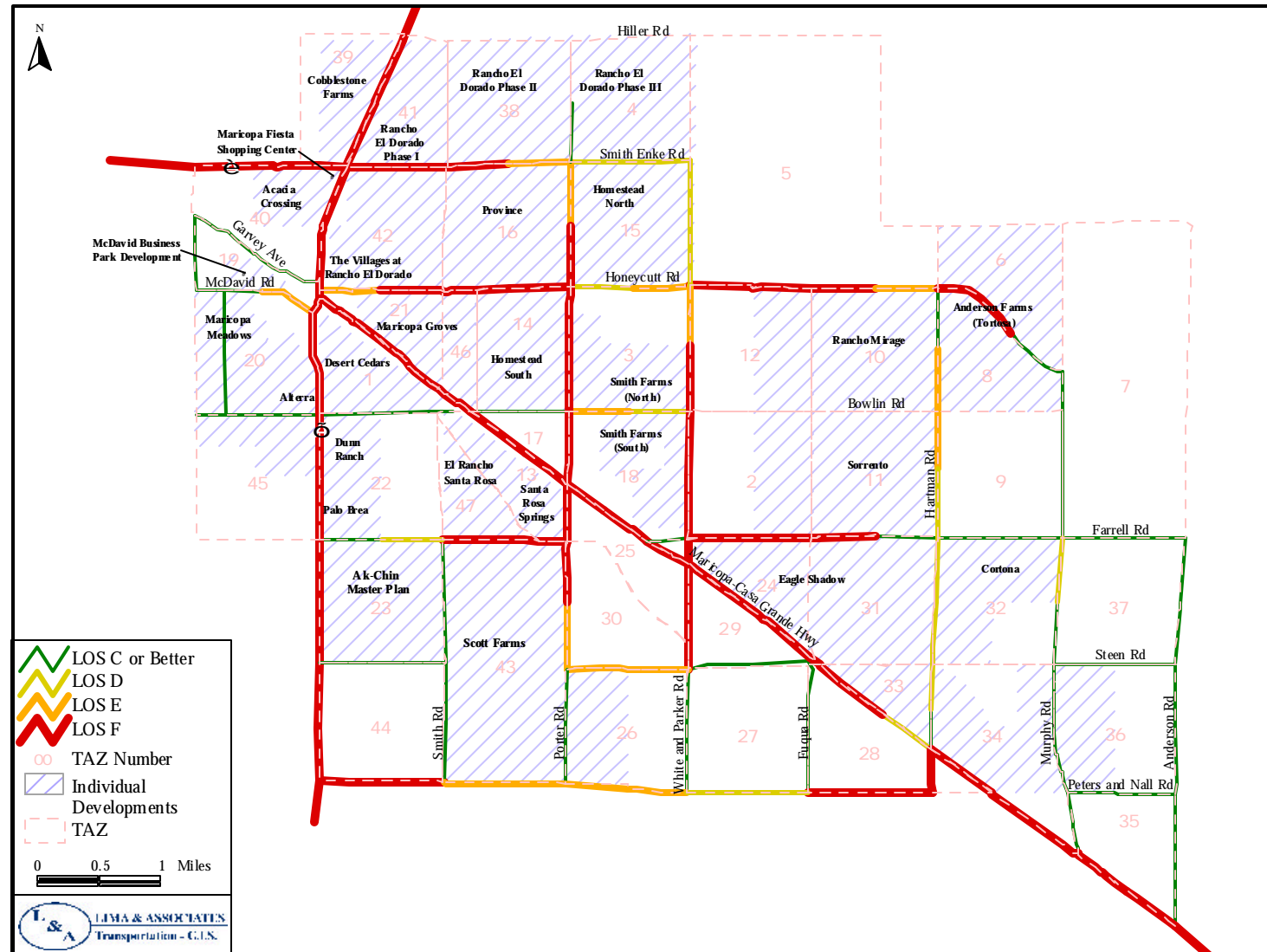


FIGURE 11. 2020 IDEAL ARTERIAL TRAFFIC VOLUMES (VPD)

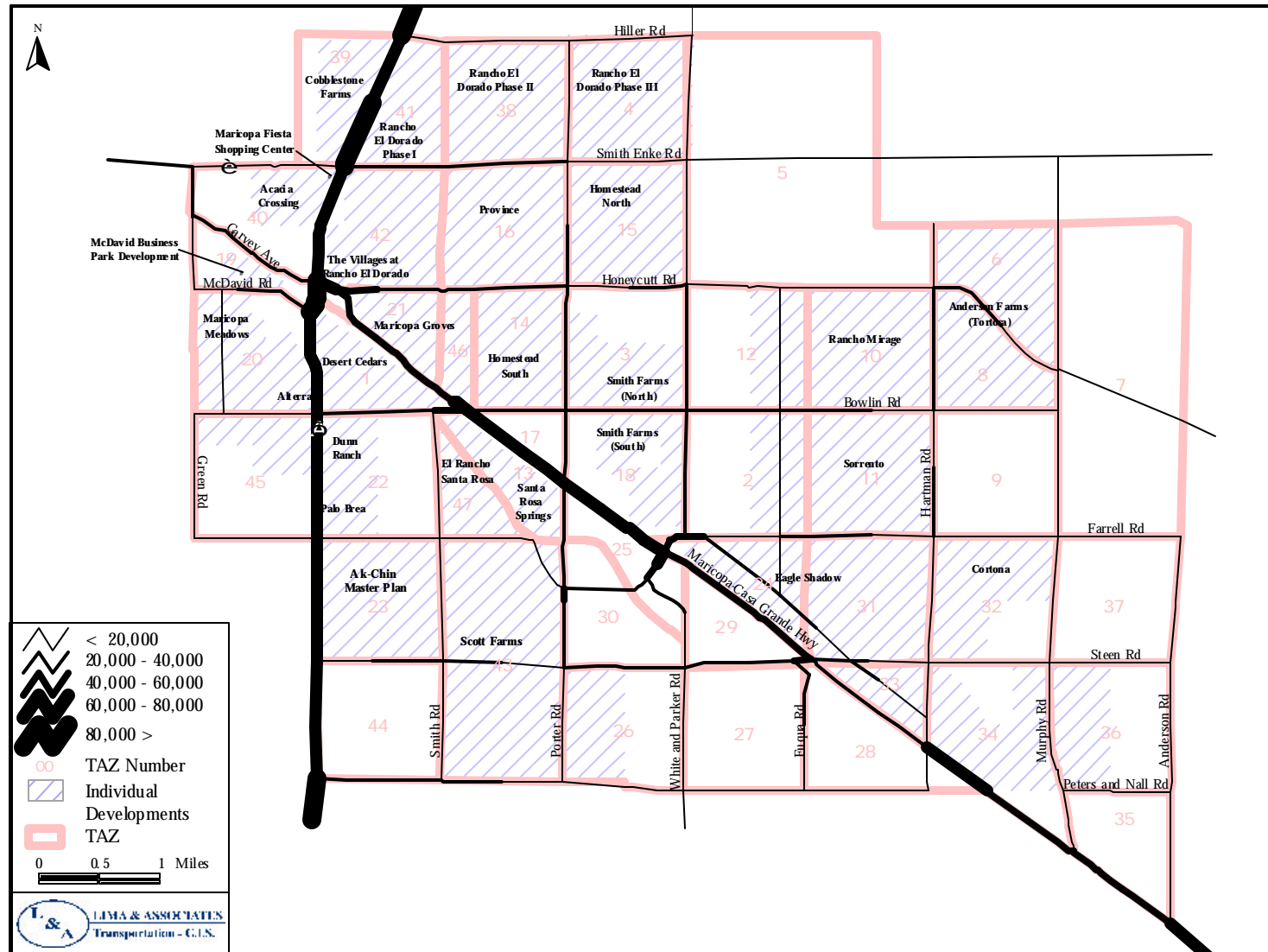
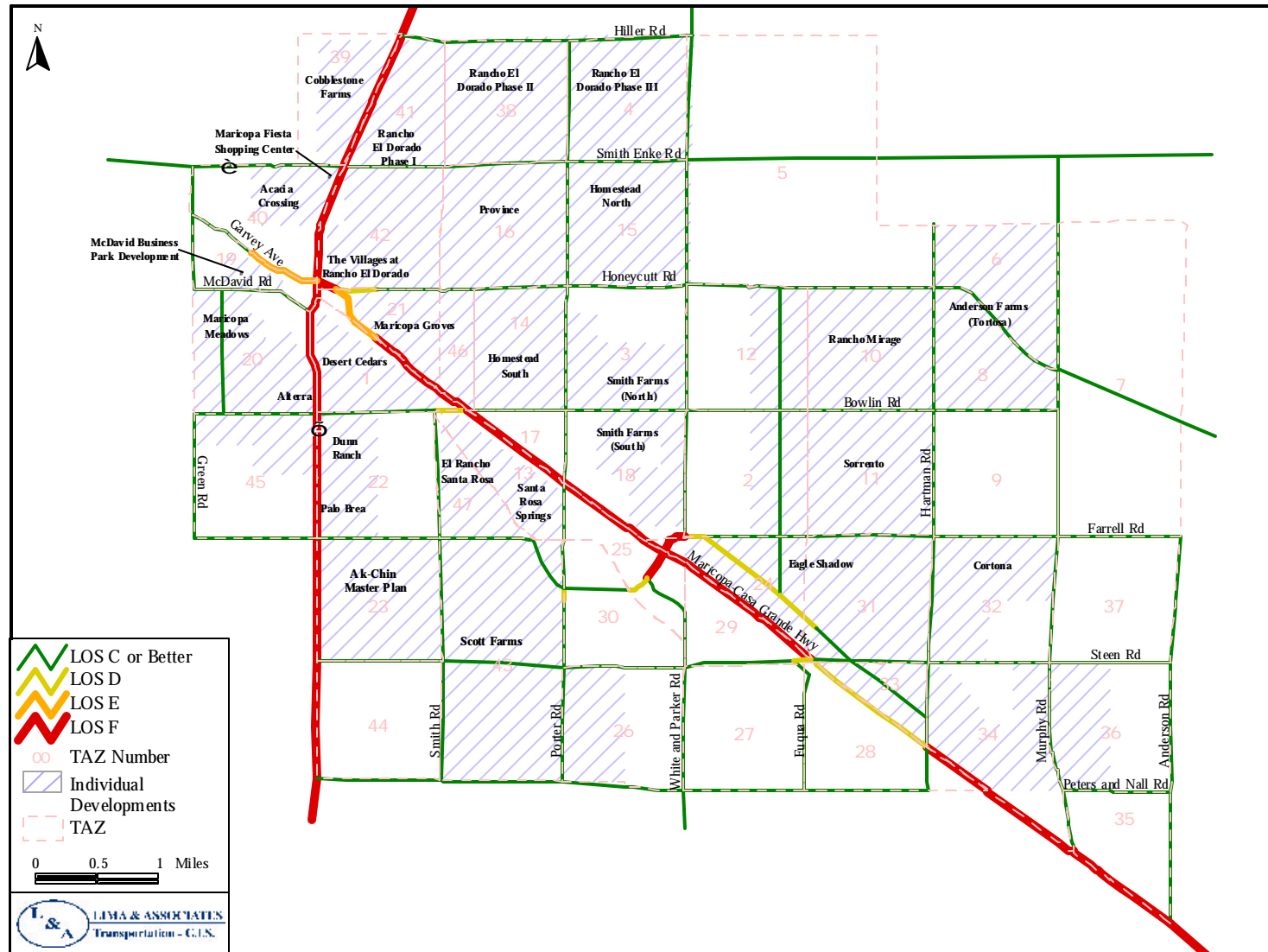


FIGURE 12. 2020 IDEAL ARTERIAL LEVEL OF SERVICE



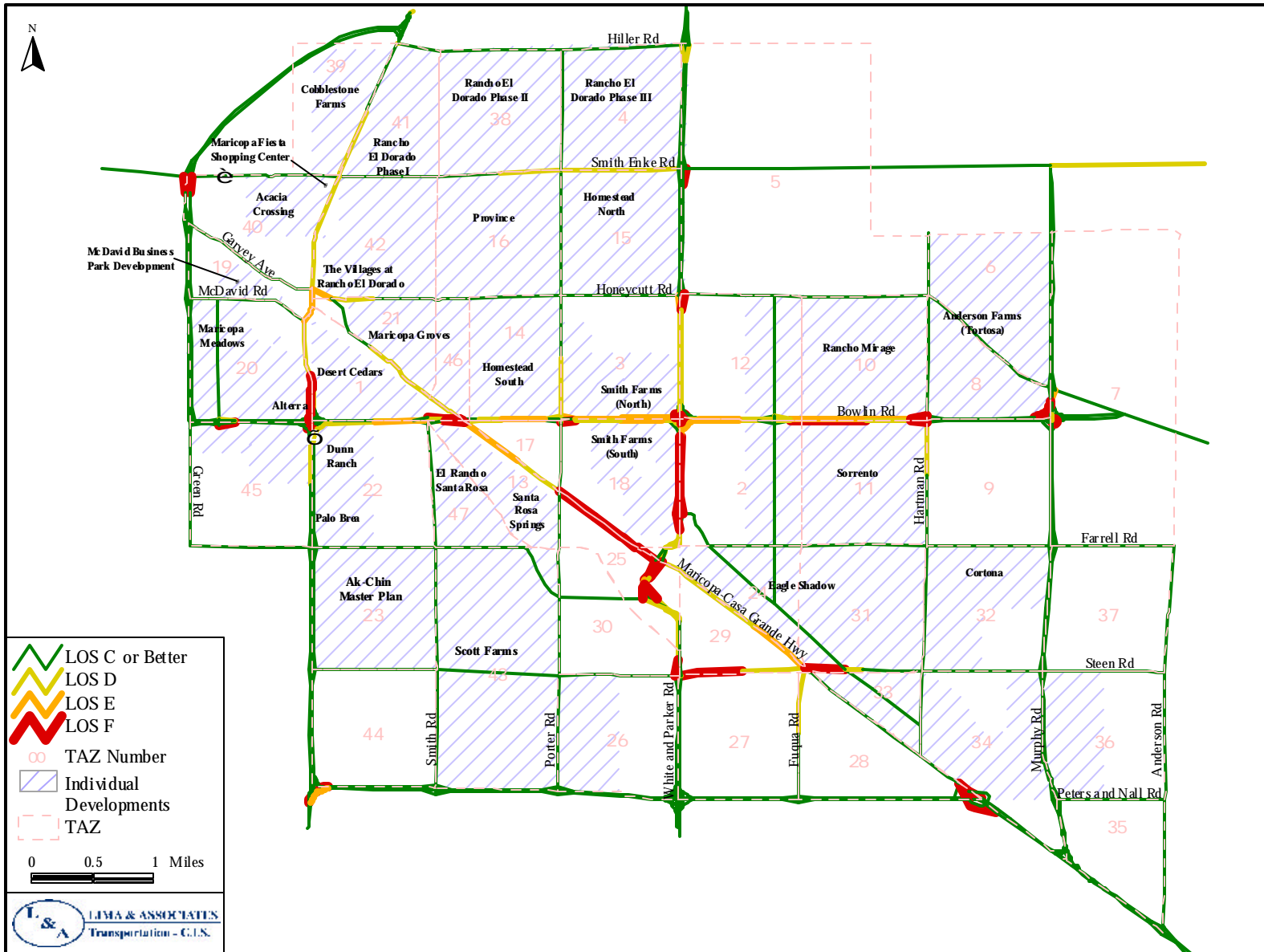
The map displays the following TAZs and Individual Developments:

- 00 TAZ Number
- Individual Developments
- TAZ

Scale: 0 0.5 1 Miles

Legend: L & A LIMA & ASSOCIATES Transportation - C.I.S.

FIGURE 14. 2020 IDEAL ARTERIAL + REGIONAL CONNECTIONS LEVEL OF SERVICE



5. STREET PLAN AND PRIORITIES

This chapter presents the street plan for the City of Maricopa and discusses possible regional connections. The functional classification system, street design criteria, regional connections, and development priorities are discussed in turn.

STREET PLAN

The street plan for Maricopa is designed to address immediate, arising, and future circulation needs caused by the rapid growth of the City. The overall goal of the street plan is to create a hierarchy of connected streets to facilitate circulation within the City and travel to and from Maricopa. Immediate needs have been identified to relieve congestion at major intersections and on key roadways. The street plan also addresses future needs five to fifteen years out as well. Ultimately, a successful street circulation system in Maricopa must be supported by developing and improving the regional connections discussed in this chapter, creating a transit program, and developing bicycle and pedestrian networks, as discussed in the next chapter.

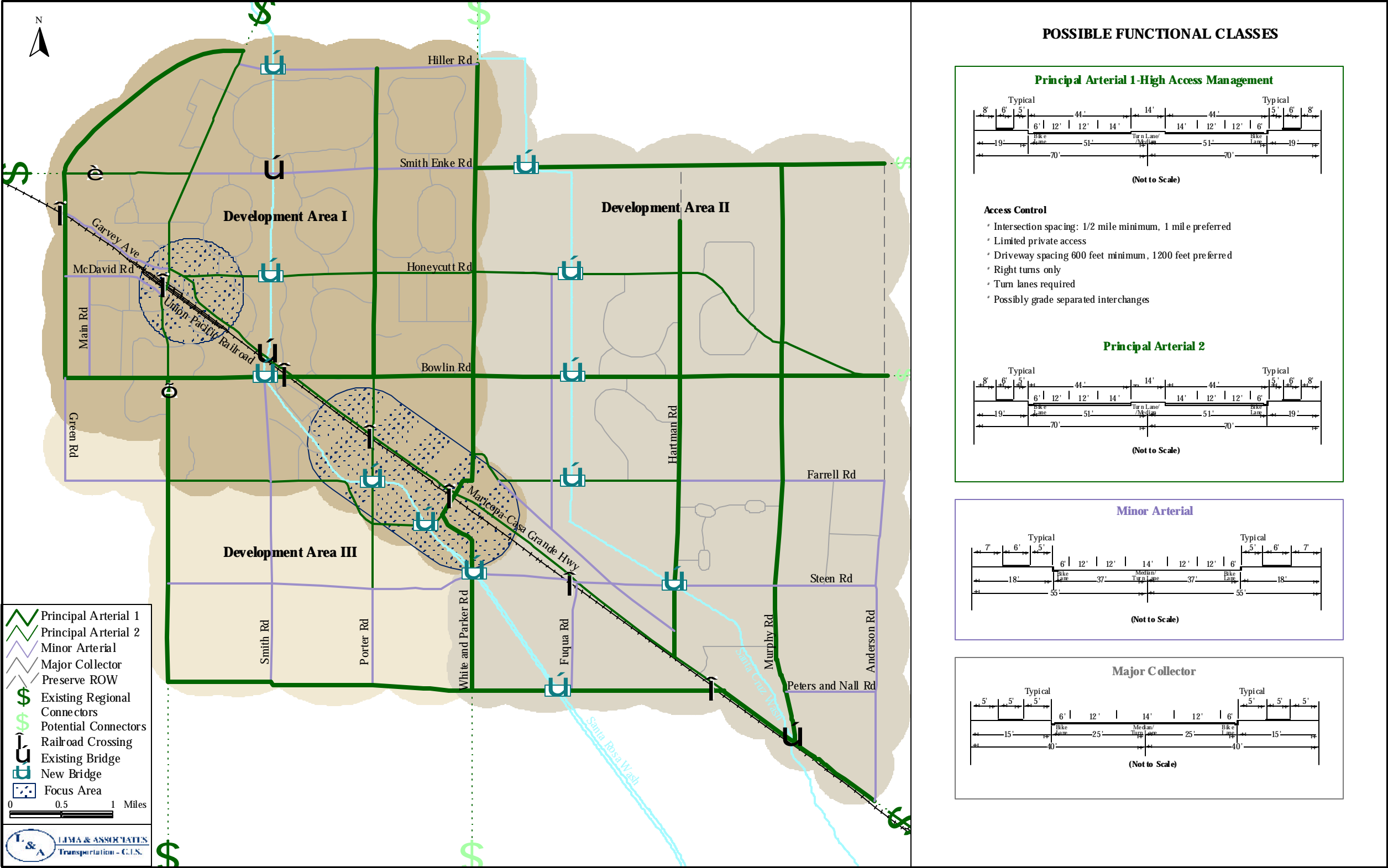
The street plan includes the street functional classification system and infrastructure components including arterial streets, bridges, and railroad crossings. The functional classification system defines roadway types by function, determining needed rights-of-way and design criteria for future roadway improvements. The infrastructure improvements have been identified by Development Area corresponding to the general timing of the development. Development Area I covers the parts of Maricopa currently under development or construction. Development Area II includes the east half of Maricopa roughly from White and Parker Road east to the City limits. Development Area III encompasses the southwest portion of Maricopa, roughly south of Farrell Road and east of White and Parker Road. Currently, the majority of this area is not within the City limits.

Functional Classification System

The functional classification is based on mobility, access to adjacent land uses, and continuity of the street network. The functional classification system for the City of Maricopa includes the following classifications; Principal Arterial I and Principal Arterial II, Minor Arterial, and Major and Minor Collector as shown in Figure 15. The following describes the characteristics of the street classifications.

Principal Arterials are generally six-lane facilities, located on the one-mile grid, serving major traffic within Maricopa connecting neighborhoods and business centers. Two levels of Principal Arterials are proposed, the first has a high level of access control providing high mobility and connects to the regional system and the second type of Principal Arterial features could have more access points and local service. Examples of proposed Principal Arterials in Maricopa include, SR 347 through town, Honeycutt Road, and the Maricopa-Casa Grande Highway.

FIGURE 15. CITY OF MARICOPA 2020 ROADWAY SYSTEM AND FUNCTIONAL CLASSIFICATION



Minor Arterials serve similar circulation needs as Principal Arterials but are typically four-lane roadways. Examples of proposed Minor Arterials include, Smith Road, Steen Road, and McDavid Road.

Major Collectors can be configured as a four-lane roadway or as a two-lane road with a center turn lane. Minor Collectors are two-lane roads with no center turn lane. Major and Minor Collectors provide internal circulation within neighborhoods providing connections to the arterial road system. The establishment of the collector road system is part of the ongoing development activity. However, the City in its planning function will ensure connectivity of the collector road system. Collectors have low access control as they provide connections to the local roadways accessing homes and businesses. Speed limits are lowest for collector roads, and should have lower traffic volumes than larger arterials and expressways.

Street Design Criteria

The roadway cross sections recommended for each street function classification are illustrated in Figure 15. Table 2 describes the design criteria recommended for each street classification.

TABLE 2. STREET DESIGN CRITERIA

Criteria	Functional Classification				
	Principal Arterial 1	Principal Arterial 2	Minor Arterial	Major Collector	Minor Collector
Right-of-Way Width	140'	140'	110'	80'	60'
Street Width (to back of curb)	102'	102'	74'	50'	36'
Pavement Width	2 x 42'	2 x 42'	70'	46'	32'
Median Width/Left Turn Lane	14'	14'	14'	14'	NA
Number of Lanes	6-7	6-7	5	3	2
Lane Widths (Directional)	12', 12', 14'	12', 12', 14'	12', 12'	12'	12'
Edge Treatment	Vertical Curb	Vertical Curb	Vertical Curb	Vertical Curb	Vertical Curb
Bike Lanes	Yes	Yes	Yes	Yes	Yes
Sidewalk (both sides)	6'	6'	6'	5'	5'
Design Speed	65-75 mph	55 mph	45 mph	35 mph	35 mph
Speed Limit	55-65 mph	40 mph	35 mph	30 mph	25 mph
Design ADT	45,000	45,000	30,000	10,000	8,000
Street Purpose	Mobility	Mobility	Mobility	Access/ Mobility	Access
Parking	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Property Access	Major Intersections Only	Major Intersections and Driveways	Major Driveway Only	Individual Driveway Head Out	Restricted

Notes: Minimum half-street requirement is 24 feet pavement width.

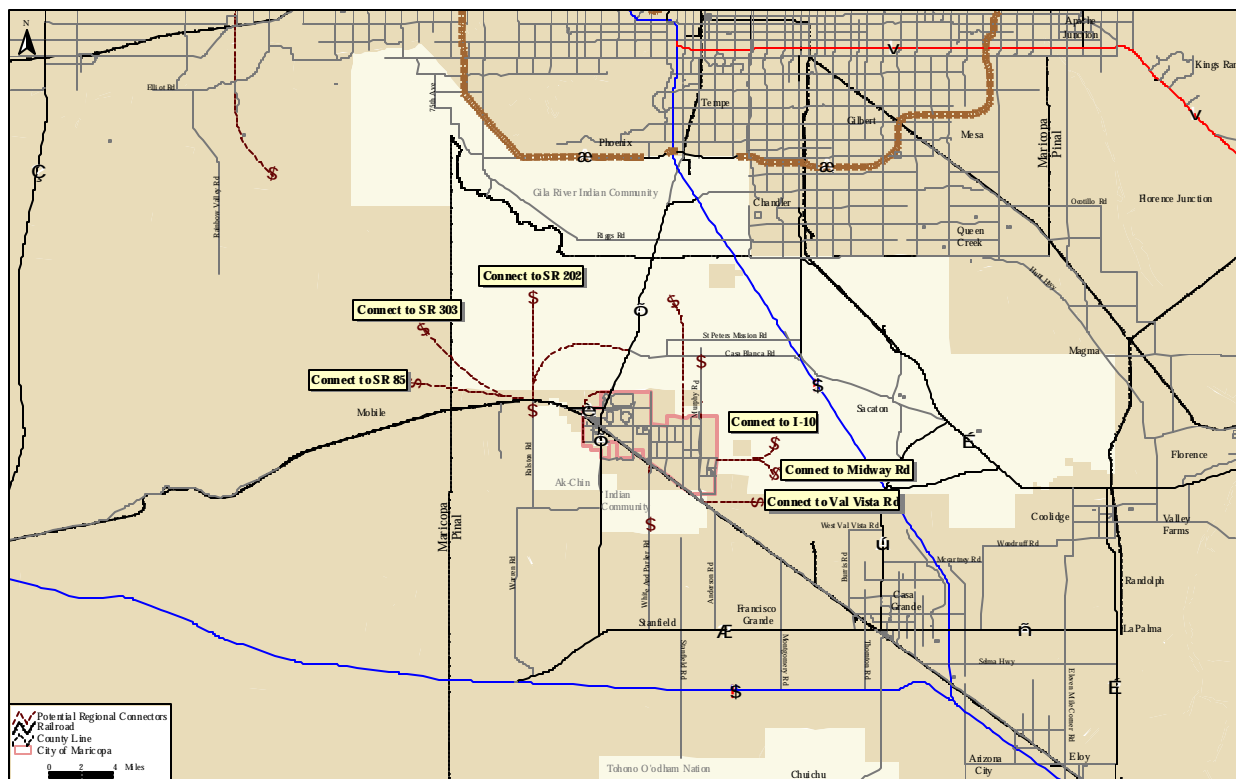
Maximum cul-de-sac length is 600 feet.

Regional Connections

Improving and developing additional regional connections is most important for accommodating growth and future traffic needs. Maricopa will need to work closely with other agencies and jurisdictions including ADOT, GRIC, Ak-Chin, Pinal County, and the City of Casa Grande to develop these regional roadways.

State Route 347 will remain a vital regional route for Maricopa and will require improvements as traffic volumes increase. It is recommended that additional north/south regional connections be considered to accommodate growth and to provide alternatives to SR 347. One such alternate route can be White and Parker Road extending both north and south. Connections to I-10 east of Maricopa along an alignment such as Bowlin Road or a continuation of Smith-Enke Road could provide an additional route for travel to and from the community. Figure 16 presents possible additional regional connections.

FIGURE 16. POSSIBLE REGIONAL CONNECTIONS



STREET PLAN PRIORITIES

Currently, the City of Maricopa is not growing in a particular pattern such as from the center outward, rather individual sections of land are being developed independently as developers acquire land. Specific projects have been identified for the study area based on the established

functional classification system needed. In order to aid in the phasing of needed improvements, the City of Maricopa was divided into three development areas: Development Area I, Development Area II, and Development Area III (see Figure 15).

Street Plan: Development Area I covers the parts of Maricopa currently under development or construction, roughly between the western city limits to White and Parker Road and from the northern city limits south to Farrell Road including the intersection of the Maricopa-Casa Grande Highway and White and Parker Road. Demand for roadway capacity is increasing rapidly in Development Area One and most projects are needed in the short-term (0 to five years). However, some projects are not feasible to be constructed in the 0 to five year time frame and are prioritized in the mid-term.

Focus Areas have been identified as shown in Figure 15, these include the area around the intersection of SR 347 and Maricopa-Casa Grande Highway, and the stretch of the Maricopa-Casa Grande Highway between Porter Road and White and Parker Road. These focus areas both involve railroad crossing issues. For each focus area detailed design concept level studies have to be undertaken in the near future to address the rather complex issues developing in the two locations.

Street Plan: Development Area II includes the east half of Maricopa roughly from White and Parker Road east to the city limits. Development Area two also includes projects and needs to be addressed generally in the 5 to 15 year timeframe. Several projects need to be implemented soon in order to respond to the growing traffic demand.

Street Plan: Development Area III encompasses the southwest portion of Maricopa, roughly south of Farrell Road and east of White and Parker Road. Currently, the majority of this area is not within the City limits; however, directly influences traffic demand within the City.

Projects by Development Area

The following table summarizes the number of lane miles and project construction costs. Approximately 390.4 lanes miles of new arterial streets or widening of existing arterials are needed. Order of magnitude construction costs were estimated using average construction cost by project type derived from recent projects in similar communities in Arizona. The total estimated cost is approximately \$282 million for construction costs and costs for design concept reports. Of the total cost, between \$200 and \$220 million of construction would be the City's responsibility. Tables 4 through 6 list the recommended projects by development area along with the time frame, estimated cost, and agency responsibility.

TABLE 3. SUMMARY OF PROJECT CONSTRUCTION COSTS

Roadway Type	Cost per Lane Mile/Unit	Needed Lane Miles/Structures	Costs
Streets			
Principal Arterial I	\$500,000	248.46	\$124,230,000
Principal Arterial II	\$450,000	170.46	\$76,707,000
Minor Arterial	\$300,000	120.44	\$42,154,000
Subtotal		539.4	\$243,091,000
Bridges and Railroad Crossings			
New or Upgraded Bridge	\$1,000,000	13	\$13,000,000
New Railroad Crossing	\$1,500,000	6	\$9,000,000
SR 347 RR Crossing	\$15,000,000	1	\$15,000,000
Subtotal		20	\$37,000,00
Studies			\$2,000,000
Total Cost			\$282,091,000

Costs are for street and structure construction and do not include right-of-way

TABLE 4. DEVELOPMENT AREA I PROJECTS

Work Item	Time Frame	Number	Cost in (000)	Responsible Party
Focus Area Old Town				
- Conduct a focused design concept study of the SR 347/Maricopa-Casa Grande Hwy/ Railroad crossing area	Short	1 Study	\$1,000	City, State
- Design and construct grade separated crossing	Mid	1 RR crossing	\$15,000	City, State
Focus Area Maricopa-Casa Grande Highway				
- Conduct a focused design concept study of the area where Porter Rd and White and Parker Rd cross Maricopa-Casa Grande Hwy and UPRR	Short	1 Study	\$1,000	City
SR 347				
- Continue to improve SR 347 as 6-lane Principal Arterial II from Hiller Rd to Farrell Rd	Short	15.3 Lane miles	\$6,885	State
SR 238				
- Improve SR 238 as 6-lane Principal Arterial II from SR 347 to western City limits	Mid	7.4 Lane miles	\$3,321	State
Maricopa-Casa Grande Highway				
- Improve Maricopa-Casa Grande Hwy to 6-lane Principal Arterial II from SR 347 to White and Parker Rd	Mid	21.7 Lane miles	\$9,747	City, County
Hiller Road Alignment				
- Construct Hiller Rd as 4-lane Minor Arterial	Mid	9.4 Lane miles	\$3,276	City
- Construct bridge on Hiller Rd crossing the Santa Rosa Wash	Mid	1 Bridge	\$1,000	City
Honeycutt Road				
- Construct Honeycutt Rd as 6-lane Principal Arterial II from SR 347 to White and Parker Rd	Short	18.0 Lane miles	\$8,100	City
- Construct bridge on Honeycutt Rd crossing the Santa Rosa Wash	Short	1 Bridge	\$1,000	City
McDavid Road				
- Improve McDavid Rd to 4-lane Minor Arterial	Short	4.0 Lane miles	\$1,400	City
Bowlin Road				
- Construct Bowlin Rd as continuous 6-lane Principal Arterial I from Green Rd to White and Parker Rd	Short	24.7 Lane miles	\$12,330	City
- Construct bridge on Bowlin Rd crossing the Santa Rosa Wash	Short	1 Bridge	\$1,000	City
- Construct grade separated RR crossing	Short	1 RR crossing	\$1,500	City

TABLE 4. DEVELOPMENT AREA I PROJECTS (CONTINUED)

Work Item	Time Frame	Number	Cost in (000)	Responsible Party
Farrell Road				
- Construct Farrell Rd to 6-lane Principal Arterial II from SR 347 to White and Parker Rd	Mid	17.6 Lane miles	\$7,938	City
- Construct bridge on Farrell Rd crossing the Santa Rosa Wash	Mid	1 Bridge	\$1,000	City
Green Road and Extension to SR 347				
- Construct Green Rd as continuous 6-lane Principal Arterial I from Bowlin Rd to SR 347	Mid	25.7 Lane miles	\$12,840	City, State
- Construct grade separated RR crossing	Mid	1 RR crossing	\$1,500	City, State
Main Road				
- Construct Main Rd as 4-lane Minor Arterial from McDavid Rd to Bowlin Rd	Mid	4.0 Lane miles	\$1,400	Development
Smith Road				
- Construct Smith Rd as 4-lane Minor Arterial from Farrell Rd to Bowlin Rd	Mid	4.1 Lane miles	\$1,428	City
Porter Road				
- Improve Porter Rd to 6-lane Principal Arterial I from Farrell Rd to Hiller Rd Alignment	Short	26.5 Lane miles	\$13,260	City
- Construct bridge on Porter Rd crossing the Santa Rosa Wash	Short	1 Bridge	\$1,000	City
- Construct grade separated RR crossing	Short	1 RR crossing	\$1,500	City
White and Parker Road				
- Construct White and Parker Rd as continuous 6-lane Principal Arterial I from Steen Rd to Hiller Rd Alignment	Short	31.5 Lane miles	\$15,750	City
- Construct bridge on White and Parker Rd crossing the Santa Rosa Wash	Short	1 Bridge	\$1,000	City
- Design and construct Railroad Crossing	Mid	1 RR crossing	\$1,500	City
Garvey Avenue				
- Improve Garvey Ave to 4-lane Minor Arterial	Short	4.7 Lane miles	\$1,652	City
Parallel Road Alignment				
- Construct Parallel Rd as 4-lane Principal Arterial from White and Parker Rd to Farrell Rd	Mid	2.4 Lane miles	\$1,080	Development
Regional Connections				
- Coordinate with GRIC on the location of an additional connection either extending Porter Rd or White and Parker Rd	Mid			City, County, State

Development Area I – Summary (000)

Short	\$68,377
Mid	\$61,030
Long	\$0
Total	\$129,407

TABLE 5. DEVELOPMENT AREA II PROJECTS

Work Item	Time Frame	Number	Cost in (000)	Responsible Party
Maricopa-Casa Grande Highway				
- Improve Maricopa-Casa Grande Hwy to 6-lane Principal Arterial II from White and Parker Rd to Anderson Rd	Mid	30.5 Lane miles	\$13,716	City, County
Smith-Enke Road				
- Construct Smith-Enke Rd as 6-lane Principal Arterial I from White and Parker Rd to Anderson Rd Alignment	Mid	23.9 Lane miles	\$11,970	City
- Construct bridge on Smith-Enke Rd crossing the Santa Rosa Wash	Mid	1 Bridge	\$1,000	City
Honeycutt Road				
- Construct Honeycutt Rd as 6-lane Principal Arterial II from White and Parker Rd to Anderson Rd Alignment	Mid	24.7 Lane miles	\$11,124	City
- Construct bridge on Honeycutt Rd crossing the Santa Cruz Wash	Mid	1 Bridge	\$1,000	City
Bowlin Road				
- Construct Bowlin Rd as continuous 6-lane Principal Arterial I from White and Parker Rd to Anderson Rd Alignment	Mid	24.1 Lane miles	\$12,060	City
- Construct bridge on Bowlin Rd crossing the Santa Cruz Wash	Mid	1 Bridge	\$1,000	City
Farrell Road				
- Construct Farrell Rd as 4-lane Minor Arterial from Hartman Rd to Anderson Rd Alignment	Mid	8 Lane miles	\$2,786	City
- Construct Farrell Rd as 6-lane Principal Arterial II from Parallel Rd Alignment to Hartman Rd	Mid	10.6 Lane miles	\$4,752	City
- Construct bridge on Farrell Rd crossing the Santa Cruz Wash	Mid	1 Bridge	\$1,000	City
Steen Road				
- Construct Steen Rd as continuous 4-lane Minor Arterial from White and Parker Rd to Anderson Alignment	Mid	15.7 Lane miles	\$5,502	City
- Construct Railroad Crossing	Mid	1 RR crossing	\$1,500	City
Peters and Nall Road				
- Construct Peters and Nall Rd as 4-lane Minor Arterial from Murphy Rd to Anderson Rd	Long	3.4 Lane miles	\$1,176	City
- Construct Peters and Nall Rd as 6-lane Principal Arterial I from Maricopa Casa Grande Hwy to White and Parker Rd	Long	14.8 Lane miles	\$7,380	City
- Construct Railroad Crossing	Long	1 RR crossing	\$1,500	City
- Construct Bridge on Peters and Nall Rd crossing the Santa Rosa Wash	Long	1 Bridge	\$1,000	City

TABLE 5. DEVELOPMENT AREA II PROJECTS (CONTINUED)

Work Item	Time Frame	Number	Cost in (000)	Responsible Party
White and Parker Road				
- Construct White and Parker Rd as continuous 6-lane Principal Arterial II from Peters and Nall Rd to Steen Rd	Mid	6.8 Lane miles	\$3,051	City
Fuqua Road				
- Construct Fuqua Rd as 4-lane Minor Arterial from Parallel Rd to Honeycutt Rd	Mid	10.0 Lane miles	\$3,486	Development
- Construct Fuqua Rd as 4-lane Minor Arterial from Peters and Nall Rd to Maricopa-Casa Grande Hwy	Mid	4.2 Lane miles	\$1,484	Development
Hartman Road				
- Construct Hartman Rd as 6-lane Principal Arterial I from Maricopa-Casa Grande Hwy to Smith-Enke Rd	Mid	25.6 Lane miles	\$12,780	City
- Construct Bridge on Hartman Rd crossing the Santa Cruz Wash	Mid	1 Bridge	\$1,000	City
Murphy Road				
- Construct Murphy Rd as 6-lane Principal Arterial I from Maricopa-Casa Grande Hwy to Smith-Enke Rd	Mid	33.9 Lane miles	\$16,950	City
Anderson Road				
- Construct Anderson Rd as 4-lane Minor Arterial from Maricopa-Casa Grande Hwy to Farrell Rd	Long	12.5 Lane miles	\$4,382	City
- Preserve R-o-W from Farrell Rd to Smith-Enke Rd	Long			City
Parallel Road Alignment				
- Construct Parallel Rd as 4-lane Minor Arterial from Farrell Rd to Hartman Rd	Mid	9.0 Lane miles	\$3,150	Development
Regional Connections				
- Coordinate with GRIC on the location of an additional connection either extending Smith-Enke Rd, Bowlin Rd, and possible connection to Val Vista Rd or White and Parker Rd; Coordinate with Ak-Chin to extend Anderson Rd or Murphy Rd to connect to SR 84	Long			City, County, State

Development Area II – Summary (000)

Short	\$0
Mid	\$110,311
Long	\$15,438
Total	\$125,749

TABLE 6. DEVELOPMENT AREA III PROJECTS

Work Item	Time Frame	Number	Cost in (000)	Responsible Party
SR 347				
- Improve SR 347 as 6-lane Principal Arterial II from Farrell Rd to Peters and Nall Rd	Short	11.7 Lane miles	\$5,265	State
Green Road				
- Construct Green Rd as 4-lane Minor Arterial from Bowlin Rd to Farrell Rd	Mid	4.0 Lane miles	\$1,400	City
Smith Road				
- Construct Smith Rd as 4-lane Minor Arterial from Peters and Nall Rd to Farrell Rd	Mid	7.8 Lane miles	\$2,730	City
Porter Road				
- Construct Porter Rd as 4-lane Minor Arterial from Peters and Nall Rd to Steen Rd	Mid	3.7 Lane miles	\$1,302	City
- Construct Porter Rd as continuous 6-lane Principal Arterial II from Peters and Nall Rd to Farrell Rd	Mid	3.8 Lane miles	\$1,728	City
Farrell Road				
- Construct Farrell Rd as 4-lane Minor Arterial from Green Rd to SR 347	Mid	4.0 Lane miles	\$1,386	City
- Construct bridge on Farrell Rd crossing Santa Rosa Wash	Mid	1 Bridge	\$1,000	City
Steen Road				
- Construct Steen Rd as 4-lane Minor Arterial from SR 347 to White and Parker Rd	Mid	12.0 Lane miles	\$4,214	City
Peter and Nall Road				
- Construct Peters and Nall Rd as 6-lane Principal Arterial II from White and Parker Rd to SR 347	Long	17.8 Lane miles	\$8,910	City
Regional Connections				
- Coordinate with Ak-Chin on the location of an additional connection extending White and Parker Rd south	Long			City, County, State

Development Area II – Summary (000)

Short	\$5,265
Mid	\$12,760
Long	\$8,910
Total	\$26,935

6. MULTIMODAL TRANSPORTATION PLAN

The multimodal plan provides recommendations for implementing a transit system for Maricopa, including types of transit and associated cost and funding mechanisms. The multimodal plan also includes recommendations for incorporating bicycle and pedestrian into the plan and provides a set of recommendations to accommodate non-motorized modes of travel as the circulation system evolves and grows. Funding for transit services and multimodal facilities is discussed in Chapter 8 and Appendix A.

EXISTING TRANSIT SERVICES

Working Paper 1 presents a detailed description of existing public transportation services within and in the vicinity of the City of Maricopa. Included are intercity bus and rail services, taxicabs, and medical and human services providers. With the exception of Amtrak's Orlando-Los Angeles *Sunset Limited* which stops at the Amtrak station in the center of Maricopa, no scheduled carriers serve Maricopa itself. In addition, no taxicabs, special needs, or medical transportation services are based in Maricopa. However, both Casa Grande and Chandler are within 20 miles of Maricopa and have cab companies willing to pick up passengers there. One shuttle service, White's, is located in Maricopa. The closest Greyhound bus stations are in Chandler and Casa Grande. Greyhound provides fixed-route bus service through the Casa Grande area along Interstate 10. In March 2005, Greyhound significantly curtailed service through Arizona, including the frequency of I-10 schedules, however, Casa Grande is still served by two schedules in each direction. The closest existing transit operation receiving Section 5311 rural transit funding is the Cotton Express, which operates a demand response system based in Coolidge. No agencies currently exist within the City of Maricopa that provide transportation services to special needs groups such as the residents of retirement centers and nursing homes, and persons with disabilities. However, several agencies based in Casa Grande include Maricopa in their respective service areas.

Rail Service

Amtrak's Orlando-Los Angeles *Sunset Limited* has a scheduled stop in Maricopa. The Amtrak station is in the center of Maricopa, located just east of the grade crossing of SR 347 and the UPRR tracks.

Amtrak operations in Maricopa are impacted by the length and location of the station platform. While Amtrak trains are not nearly as long as freights, the *Sunset Limited* often consists of as many as two locomotives and eight or more cars. The trains include chair cars, sleeping cars, a lounge car, and a dining car, each of which is 85 feet long. At least two chair cars and two sleeping cars are carried, because one of each is switched from the train at San Antonio and added to the *Texas Eagle*, destined to Chicago. At least one chair car and one sleeping car continue on to Orlando. Hence, the *Sunset Limited* might be close to 900 or more feet long.

The Maricopa station platform is only 300 feet long and begins just east of the SR 347 crossing. The Amtrak cars are double deckers, with most of the chair car seats and the sleeping car rooms located on the upper level. Maricopa—in addition to local population growth—is the closest Amtrak stop to Phoenix and is experiencing a growing volume of arriving and departing Amtrak passengers. Hence, the train frequently must make two or three “spots” during each arrival to load and unload everyone, all the while blocking the SR 347 crossing for ten to fifteen minutes. It is awkward for a passenger to board a car other than the one in which space for the passenger’s trip is reserved.

Amtrak does not keep the Maricopa Station open extended hours. Because the eastbound train arrives late at night and the westbound train arrives early in the morning, the station is open overnight only. These hours make it inconvenient for persons to purchase tickets or make reservations in person—although Amtrak maintains both an “800” number and a Website for those purposes.

EVALUATION OF DEFICIENCIES AND NEEDS

This section summarizes the needs of transit-dependent persons in Maricopa and discusses opportunities and restraints regarding appropriate ways of addressing these needs. In many transit-related studies, the demographics of the area transit-dependent population are identified through analysis of census data. However, in Maricopa’s case, the total population of the area at the time the 2000 census was conducted was too small to result in significant data with regard to the numbers of transit-dependent sub-populations. These populations include households without automobiles and mobility-limited persons. For privacy reasons, in rural areas with small overall population, data regarding these sub-groups is provided at the “block-group” level, only. Too few block groups comprise the study area to enable meaningful analysis. The following discussion is based on observations of project team members and research concerning available medical, recreational, transportation, and other types of services.

Current Unmet Needs

The current needs of transit-dependent persons in Maricopa are similar to those of any small community without access to local or regional transit service. Limited goods and services are available locally. Transit-dependent persons needing goods or services not found in Maricopa must rely on relatives or friends with automobiles for assistance.

Maricopa has a local doctor, as well as a clinic serving kidney dialysis patients. One dentist has an office in the community. However, the closest hospitals, eye doctors, and other specialists are in the Ahwatukee Foothills area, Chandler, or Casa Grande. The nearest senior centers and nursing homes are also located in the Ahwatukee Foothills area, Chandler, or Casa Grande.

The County seat, Florence, is 48 miles from Maricopa. However, judges in rural Arizona counties often do not accept distance as a valid reason for being excused from jury duty. The closest malls, hardware stores, commercial airport, bus stations, driver's license testing sites, and other essentials are all nearly 20 miles from the center of Maricopa. Movie theatres, public swimming pools, skate parks, and other activities popular with young persons are also similarly distant.

As difficult as it may be to travel from Maricopa, it is equally difficult to travel to Maricopa. White's Shuttle, the only local private transportation carrier, provides service to and from Amtrak; however, additional service may be needed. Persons willing to drive to Maricopa to catch the train must depend on relatives or friends, as well, because no secure or long-term parking is provided for Amtrak patrons.

Opportunities and Constraints

Maricopa is growing so rapidly that the needs of its transit-dependent citizens are also changing quickly. A response identified as appropriate mitigation for current unmet needs may well be out-of-date by the time it is implemented. One way to meet this challenge would be to implement services flexible enough to evolve as the City grows. A Maricopa-based medical transportation service (or vehicle) will be needed even when more medical services are provided locally, for example.

Medical transportation services are typically provided by the private sector. Obtaining service upgrades when appropriate may simply involve keeping potential providers aware of Maricopa's demographics so they will know when to enter the market.

Senior Center-Based Services

Based on the transit-related developments of other Arizona communities, the first local transit service may be provided as part of the establishment of a Maricopa-based Senior Center. These centers typically obtain Federal Transit Administration (FTA) Section 5310 funding for the purchase of one or more vehicles used to transport seniors to the center, as well as to provide "meals on wheels" services for those who are homebound. Section 5310 funds are for capital purchases such as vehicle acquisition and may not be used to subsidize operations. The local jurisdiction where the center is located would appropriate matching funds. If LTAF II funds are available, they can be used for this purpose.

Many cities and towns with populations equivalent to what Maricopa's will be in a few years, such as the Town of Payson (population 14,000) have senior centers that provide Section 5310 and locally-funded transit services for seniors.

Ride-sharing Program

One way to address the demand for travel by transit-dependent persons—other than medical emergency or senior travel—would be to establish a community ride-sharing program. Such a program could include carpools as well as vanpools. As vanpool ridership between Maricopa and specific destinations or areas in metropolitan Phoenix or Tucson increases, some vanpools could evolve into commuter bus service.

Community Transit Center

The City should consider setting aside appropriate space for a community transit center. The center should be located strategically on one of the regional arterials serving the area such as SR 347 or the Maricopa-Casa Grande Highway. Locating the center adjacent to the Union Pacific Railroad would enable the use of the center as the Amtrak station as well as a future regional or commuter rail facility. Possible elements of the community transit center could include a transfer terminal for use by future intercity bus, shuttle, and rail services and future local area circulators and park-and-ride facilities for transit passengers as well as car pool and van pool participants.

Such a transit center could also be part of a larger community gateway facility that includes:

- Tourist and newcomer information center staffed by local volunteers or Chamber of Commerce staff
- Economic development satellite office
- Full service truck and RV stop
- Secure long-term parking for Amtrak patrons
- Bicycle rental

Provision of such terminal facilities is a major stumbling block for private sector transit operators, many of whom are under capitalized and have committed available capital to the purchase of the vehicles themselves. Conceivably, the provision of such a center could be a catalyst for the entry of new private sector transit providers into the market place.

Auto-oriented Developments

Many residential developments within Maricopa predate incorporation and are essentially automobile-oriented in design. Some developments are designed as discrete communities having internal circulations of loop roads or spines with cul-de-sac branches not designed to facilitate efficient pedestrian or bicycle travel between adjacent developments or between a residence within a development and an external commercial area. In these developments, the internal roadway system is linked to the external network by one or more “gateway” entrances from arterials.

The success of a transit system depends to a large extent on the likelihood that bus stops along the routes can be accessed by pedestrians without having to walk more than a quarter of a mile from their points of origin to a stop. Some existing Maricopa developments are inadvertently designed to discourage transit usage. The lack of contiguous collector streets between the developments would result in higher walking distances from residences to bus stops than would otherwise be the case.

The logical sites for bus stops for a fixed route service serving developments designed in this manner would be stops or bus-pullouts located just downstream from the developments' "gateway" entrances. However, given the few alternatives available to motorists driving to or from development residences, these gateways will have significant traffic and turning movements and the presence of a stopped bus might represent unacceptable sight-distance issues. On the other hand, the lack of connectivity between the internal circulation networks of adjacent developments would preclude the efficient operation of neighborhood circulator or dial-a-ride services.

Amtrak's Uncertain Future

As outlined in a previous section, Amtrak's *Sunset Limited* currently stops in Maricopa, having been re-routed from the line through Phoenix in 1996. However, the Union Pacific has received authority from the Federal Railroad Association and the Surface Transportation Board to re-open the Phoenix route as a through line. Such an action will require repairing several bridges between Phoenix and Wellton, and the timing for reopening the line is uncertain. Furthermore, neither Amtrak nor Union Pacific has announced that the *Sunset Limited* will be re-routed once the Phoenix route is ready. In addition, Congress is currently debating the level of Amtrak funding, and the future of long-distance trains such as the *Sunset Limited* is by no means guaranteed. The cessation of Amtrak service to Maricopa would have both positive and negative effects on area circulation and mobility.

TRANSIT IN ARIZONA PEER COMMUNITIES

Since the City of Maricopa is expected to grow rapidly to approximately 170,000 persons by 2020, Arizona cities with larger populations than Maricopa have been reviewed in regard to transit services. Table 7 presents transit services in communities ranging in population from approximately 21,500 to 1,350,000 persons.

Cities having current populations in the range of the 2005 population of Maricopa do operate some transit services. Table 8 provides information on these cities. Currently, small communities in Arizona with populations close to that of Maricopa as well as some below Maricopa's population are operating transit systems. Some larger cities in Arizona operating transit services have current populations similar to the 2020 projected population of approximately 179,000. In fact, the City of Tempe with a population of 163,843 and a service area of 40 square miles has a service area population density similar to that projected for Maricopa in 2020.

**TABLE 7. TRANSIT SERVICE
CHARACTERISTICS OF ARIZONA CITIES**

Community	Service Area Population	Service Area Sq. Mile
Fixed Route Service		
Phoenix ¹	1,350,000	476
Tucson ¹	503,991	242
Mesa ¹	345,000	120
Scottsdale ¹	189,000	56
Tempe ¹	163,843	40
Kingman ²	40,000	17
Sierra Vista ³	37,000	138
Dial-a-Ride Service		
Phoenix	1,350,000	476
Maricopa County	996,166	416
Tucson	503,991	242
Glendale	208,000	59
Peoria	100,000	141
Sun City	65,899	28
Surprise	21,442	67

Source: 1. 2000 National Transit Database

2. City of Kingman, estimated from 10 months of operation through December 2003

3. City of Sierra Vista, data from October 2002 through September 2003

**TABLE 8. TRANSIT SERVICES PROVIDED
BY SMALLER ARIZONA COMMUNITIES**

City	2002 Population	Type of Service		Comments
		Deviated Fixed Route	Dial-a- Ride	
Sedona	10,192	X		New service begins ca. April 2006
Cottonwood	9,179	X	X	
Coolidge	7,786	X		
Show Low	7,695	X		Operates joint service with Pinetop-Lakeside
Globe	7,486		X	Participates in Miami dial-a-ride
Pinetop-Lakeside	3,582	X		Operates joint service with Show Low
Miami	1,936		X	Receives support from Globe
Pearce-Sunsites	N/A		X	Census data unavailable

Source: Census 2000; Arizona Department of Transportation, Public Transportation Division.

Like Maricopa, Tempe has a rail line running through its center. By 2020, Maricopa, with the Stanfield planning area to the west, the Casa Grande planning area to the east, and the Tribal lands to the north and south, may be “landlocked” as Tempe is now. Unlike Tempe, Maricopa does not have short-term plans for a light rail line. However, if the population and density of the City grow as projected, Maricopa will need to begin planning for regional or local high capacity transit service by 2020 if not sooner.

TRANSIT SERVICE THRESHOLDS

This section presents demographic thresholds that have been used to determine when different forms of transit service should be implemented and discusses the application of such thresholds in Maricopa. Combined residential and employment threshold densities are used to indicate when a certain level of transit service may be justified. Table 9 is based on thresholds calculated from data presented in the 2003 *MAG High Capacity Study*.

TABLE 9. MINIMUM CONSOLIDATED RESIDENTIAL AND EMPLOYMENT DENSITIES FOR VARIOUS TYPES OF TRANSIT SERVICES

Transit Service Type	Persons/Sq Mile*
Bus–minimum service (1/2 mi between routes, 20 buses/day)	4,500
Bus–intermediate service (1/2 mi between routes, 40 buses/day)	7,780
Bus–frequent service (1/2 mi between routes, 120 buses/day)	16,670
Light rail	10,000
Rapid transit	13,300

*Calculated from Maricopa Association of Governments *High Capacity Transit Study*, 2003

Table 10 presents the estimated combined residential and employment for the City from 2005 to 2020. As the table shows, density for the entire study area is projected to increase from approximately 334 persons per square mile in 2005 to 5,900 persons per square mile in 2020. However, current developed areas in the City are approaching 5,000 to 6,000 persons per square mile. Based on the thresholds listed in Table 9, minimum bus service may be justified currently and a level of bus service ranging from minimum to an intermediate level will be justified as the City approaches build-out.

TABLE 10. ESTIMATED COMBINED AVERAGE RESIDENTIAL AND EMPLOYMENT DENSITY WITHIN THE CITY OF MARICOPA

Year	Estimated Population	Estimated Employment	Study Area Square Miles	Average Combined Density
2005	10,000	2,174	36.5	333.53
2010	66,330	13,614	36.5	2,190.24
2015	122,660	25,054	36.5	4,046.96
2020	179,000	36,498	36.5	5,904.05

Source: Lima & Associates

TRANSIT ELEMENT

A number of roadway-based and fixed-guideway forms of transit service exist, including bus service, light rail, commuter rail, subways, and monorail. Four modes of transit have been identified as most likely for eventual implementation Maricopa.

- Dial-a-ride and paratransit service
- Deviated fixed route service
- Fixed route service including local, express, and limited stop service
- Bus rapid transit

Transit-related Goals and Objectives

When the City's General Plan is drafted, transit-related goals and objectives should be included. The following draft goals and objectives are provided as guidelines for this purpose:

Integration of Land Use and Circulation

Goal: Promote a multimodal transportation system of arterial, collector, local streets, and non-motorized facilities capable of accommodating the anticipated travel demands of the Land-Use Element.

- Policy a: Evaluate proposed changes or modifications in either the Land Use element or Transportation/Circulation element to ensure that the transportation facilities adequately serve the specified land uses to ensure compatibility between the elements.
- Policy b: Develop transit, pedestrian, and equestrian facilities as applicable for proposed land use developments in order to facilitate the transportation circulation system.
- Policy c: Continue to monitor the impacts of land use to ensure that the transportation system is not overburdened.
- Policy d: Actively coordinate land use development and transportation decisions.

Public Transportation

Goal: Provide or facilitate the provision of local and regional public transportation service in areas or markets where unmet transportation needs will exist at buildout.

- Policy a: Establish park-and-ride lots within the Maricopa area to facilitate the development of carpools, van pools, and transit service.
- Policy b: Coordinate with Valley Metro, Pinal County, or the City of Casa Grande to extend regional bus or Dial-a-Ride services into the Maricopa area as appropriate.
- Policy c: Identify Maricopa arterial roadways likely to become future transit routes and consider the possibility of future transit operation and the addition of transit-related features such as bus pull-outs as roadways are designed.
- Policy d: Plan for future transit center and park-and-ride along the Union Pacific Railroad in the City Center.

Transit-Related Options

This section recommends steps to be undertaken by the City regarding the future role to be performed by alternative modes in Maricopa's transportation system.

Near-Term Actions

In the meantime, it is recommended that the City keep regional operators of special needs transit services such as medical transportation services and services to seniors and mobility-limited persons, up to date on the City's rapidly changing demographics so that operators will make informed decisions about beginning or increasing service to the area. The City should also take the following near-term steps to be better prepared to respond to multimodal needs as it urbanizes.

In the near term, the City will also want to follow the Congressional debate regarding Amtrak funding, as well as Amtrak and Union Pacific discussion concerning the route of the *Sunset Limited* across Arizona, in order to anticipate any changes to Amtrak service in the area.

Transit Advisory Committee

The City should consider appointing a volunteer Transit Advisory Committee to assist the City in identifying and responding to Maricopa's transit-related issues and concerns. The Transit Advisory Committee, which could be a subcommittee of a Transportation Advisory Committee, could act as a liaison for transit issues between the City and the business community, and could also provide input for future transit actions such as equipment selection, route selections and additions, and transit center concept and site selection.

City Transportation Coordinator

The consultant recommends that the City hire or designate a city transportation coordinator to develop a rideshare program, serve as a clearing house for local and regional public transportation information, and manage the implementation and operation of the transit service. Fortunately, nearly all of these duties would likely be considered “administrative” in nature by the ADOT officials who administer the Section 5311 funds and determine the percentage of local “match” required. Some activities that the coordinator might carry out, such as inspecting vehicles, would be considered “operations,” but these would consume a small portion of his or her time, especially in the short-term. The Transit Advisory Committee could assist the City in identifying the desirable attributes of the coordinator position and work with the coordinator after his or her selection.

Transportation Demand Management Alternatives

Transportation Demand Management consists of a wide range of programs and services that enable people to get around without driving alone. Included are alternative transportation modes such as carpooling, vanpooling, transit, bicycling, and walking, as well as programs that alleviate traffic and parking problems such as telecommuting, variable work hours, and parking management.

Transportation Demand Management can address the needs of those traveling long distances with rideshare options such as vanpools and carpools. These types of services are vital in moving people around large areas, whether for work or for traveling to regional centers that have special services, medical facilities, or retail stores.

Transit Oriented Development

While existing residential developments are largely automobile oriented in design, the City can require or encourage more transit-oriented designs in new residential developments, or in developing commercial corridors, by means of zoning overlays and other methods. For example, the Town of Oro Valley, north of Tucson, requires that at least half the parking spaces in a commercial development be located on the side of or in back of the buildings. This requirement reduces the distance that a transit rider must walk across a parking area after exiting a bus. New residential developments could be required to adhere to a grid of local and collector streets, with fewer cul-de-sacs, internal loop roads, and other non-contiguous roadways.

Mixed-use development—buildings two or more stories in height with commercial space on the ground floor and residential space above—could be permitted or encouraged in commercial corridors. Such actions increase future transit ridership, improve transit operating economics, and thus make the provision of transit service more politically and economically feasible.

The City should also identify candidate sites for a future transit center and park-and-ride lots and take steps to preserve the land needed for their use.

Mid-Term Actions

In addition to tracking area demographics compared with the thresholds presented in the previous section, the City should monitor:

- Number of citizens requesting dial-a-ride and/or transit service
- Number of commuters traveling outside the area

The City should consider implementing a ridesharing program. Concurrent with the implementation of ride-sharing programs, the City should construct initial park-and-ride facilities for use by the car pools and van pools.

Long-Term Actions

In the long-term, the community transit center for which a site has been preserved should be constructed for use by express bus and shuttle operators, the local bus system when warranted, and possible future light rail and commuter rail service.

When area demographics have evolved to where the threshold to support a start-up local bus system has been met or exceeded—or soon will be—the City should initiate the necessary steps to plan, fund, and implement the system. These steps are outlined in the following section.

NON-MOTORIZED MODES

The development of the transportation system within the City of Maricopa should accommodate bicycle and pedestrian travel as it grows. Incorporating bicycle and pedestrian facilities into street design and development plans ensures ongoing improvement in conditions for bicyclist and pedestrians.

Bicyclist

Bicycle travel within the City can be accommodated through the construction of a comprehensive network of bike lanes. The proposed cross-sections for arterials and collectors all include six-foot bike lanes as a standard feature. Bicycle travel is primarily a local or sub-regional activity; however, accommodating regional bicycle travel is important as well. SR 347 is an excellent regional connector for both auto and bicycle travel.

State policy allows bicyclist to operate on all roadways open to the public including SR 347 and SR 238. The ADOT bicycle plan rated state routes for bicycling conditions based on right shoulder width, traffic volume to capacity ratio, percent trucks, and speed limit. A score is assigned for the criteria above to assess bicycling conditions on all state routes. Not all criteria are equally important, right shoulder width and traffic volume are more important than speed limit and weighted higher. Based on these scoring techniques, ADOT produced a *Map of Suitable Bicycle Routes*, for the state system. State Route 347 north of SR 238 is rated as “more suitable” for bicycle travel and “less suitable” south of SR 238. SR 238 is rated as “less suitable” for bicycle travel.

Pedestrians

The City of Maricopa is a fairly compact community being about eight miles wide by six miles long. Compared to some sprawling cities in Arizona, Maricopa lends itself to walking as a more integrated means of travel and recreation throughout the community. To accommodate walking the proposed arterial and collector street cross-sections include sidewalks as a standard feature. The sidewalks are separated from the back of the curb, keeping pedestrians a comfortable distance from auto traffic, which encourages walking. Additional pedestrian facilities that should be included with the development of the street system include pedestrian signals and cross walks at intersections.

In addition to the sidewalk network, Maricopa should investigate opportunities for off-street paths or trails. These may be located in or along natural features like washes and could be an opportunity to connect neighborhoods, parks, and provide recreation.

7. GUIDELINES FOR RAILROAD CROSSINGS AND ACCESS MANAGEMENT

Chapter 7 presents guidelines for making decisions in regard to constructing grade separations at railroad crossings. In addition, guidelines are presented for access management to ensure that efficiency and safety are maintained on the roadways within the City.

RAILROAD CROSSINGS

Railroad crossings are an important element of the Maricopa Street Plan. The amount of freight transported by railroads is expected to double over the next twenty years and subsequently the numbers of trains at some grade crossings will also more than double. One result of the increased rail traffic will be that more grade crossings will be closed to highway traffic for long periods of time each day. Coupled with expected increases in auto and truck traffic, especially in high-growth areas such as Maricopa highway, delay is likely to increase significantly at highway-rail grade crossings. The delay to motorists and pedestrians will reach unacceptable levels in the community, blocking emergency vehicles, disrupting local commerce, inconveniencing residents, and creating societal divisions. Delay and safety are the main issues related to at-grade railroad crossings. Delay is the amount of travel time lost while the grade crossing is closed. Safety promotes any awareness and device to eliminate accidents at the railroad/highway grade crossings.

At-grade railroad crossings can be extremely hazardous, even when they are protected with flashing lights and crossing barriers. Collisions between vehicles and trains have been the greatest source of injuries and fatalities in the railroad industry. Train-vehicle collisions not only result in death and injury, but also may cause destruction of property, fires, and explosions. Rail-highway crashes may cause train derailments resulting in hazardous-material spills, which often necessitate evacuations. In fact, whenever locomotive engineers apply emergency brakes attempting to avoid hitting vehicles or pedestrians, they risk derailment. In the past several years, the number of trespassers killed and injured along the railroad's right-of-way has exceeded those killed and injured at the grade crossings. According to the Federal Railroad Administration, the State of Arizona ranks fourth in the nation for pedestrian trespass injuries and ninth in the nation for pedestrian trespass fatalities.

General Policy on Crossings

The priority of the Federal Railroad Administration and Class I Railroad is to close existing at-grade roadway-railroad crossing wherever practical. As discussed earlier, at-grade crossings are hazardous, and Federal agencies place every effort to eliminate these crossings to prevent train-vehicle collisions, pedestrian deaths, and vehicle delay. Grade crossings can be eliminated by selecting one of the following options:

- Constructing a connector road, or improving roadways along alternate routes to direct traffic to an adjacent crossing.
- Dead-ending affected streets and rerouting traffic, creating cul-de-sacs.
- Constructing grade separation.
- Relocating or consolidating railroad operations.

Some crossings may have vehicle volumes too low to justify expenditures for the costs of automated warning devices or grade separation. Railroad crossing candidates identified for railroad closure or consolidation include:

- Crossings within a quarter mile of one another that are part of the same highway or street network.
- Crossings where vehicular traffic can be safely and efficiently redirected to an adjacent crossing.
- Crossings where a high number of crashes have occurred.
- Crossings with reduced sight distance because of the angle of the intersection, curve of the track, trees, undergrowth or man-made obstructions.
- Adjacent crossings where one is replaced with a bridge or upgraded with new signaling devices.
- Several adjacent crossings when a new one is being built.
- Complex crossings where it is difficult to provide adequate warning devices or which have severe operating problems - such as multiple tracks, extensive railroad-switching operations, or long periods of blocked crossings.
- Private crossings for which no responsible owner can be identified.
- Private crossings where the owner is unable or unwilling to fund improvements and alternate access to the other side of the tracks is reasonably available.

Grade Separated Railroad Crossings

When railroad and vehicle traffic volumes reach a high level, the most effective solution may be to separate highway and rail traffic. A list of criteria to determine whether a particular crossing should be improved as a grade separated railroad crossing or closed include:

- Accident history
- Vehicle and train traffic (present and projected)

- Type of roadway (thoroughfare, collector, local access, truck route, school-bus route or designated emergency route)
- Economic impact of closing the crossing
- Alternative roadway access
- Type of property being served (residential, commercial or industrial)
- Potential for bridging by overpass or underpass
- Need for enhanced warning devices (four-quadrant gates, longer arm gates or median barriers)
- Feasibility for roadway improvements
- Crossing condition (geometry, sight distance, crossing surface)
- Available federal, state and/or local funding

Generally, there are two options for grade separation: a below-grade (underpass) crossing, and an above-grade (overpass) crossing. An overpass crossing is when a roadway bridge is built to span the railroad tracks. An underpass crossing is when the roadway grade is depressed under the railroad tracks. Table 11 presents the advantages, disadvantages, and general levels of cost associated to the at-grade, overpass, and underpass railroad crossings.

ACCESS MANAGEMENT

The purpose of this section is to provide an overview of access management issues confronting the City and to provide recommended practices for the management of vehicular access to all City-owned roadways.

Definition of Access Management

Access management is defined as the regulation of vehicular access to public roadways from adjoining property. Access management is provided through legal, administrative, and technical strategies available to a political jurisdiction under its police powers in order to maintain the health, safety, and welfare of the jurisdiction's residents. Access management regulates the level of access control on roadways and is needed to help retain the capacity of public highways, access to private land, and maintain public safety.

In general, property owners have a right of reasonable access to an adjacent roadway. However, governments may restrict the use of private property to protect or advance the public safety and general welfare to prevent public injury or where demanded by public interest. Private rights of abutting landowners to access their property are generally subservient to the rights of the public to free and safe use of the public street system.

TABLE 11. ADVANTAGES AND DISADVANTAGES OF RAILROAD OVERPASSES AND UNDERPASSES

At-Grade	Overpass	Underpass
Advantages		
<ul style="list-style-type: none"> - Low maintenance cost - Least expensive alternative to build 	<ul style="list-style-type: none"> - Eliminate conflicts at crossing - Enhance safety - Decrease travel time - Support long-term connectivity - Increase redevelopment potential 	<ul style="list-style-type: none"> - Eliminate conflicts at crossing - Enhance safety - Decrease travel time - Support long-term connectivity - Increase redevelopment potential - Reduce visual impact - Increase visual aesthetics - Disturb the least amount of existing businesses
Disadvantages		
<ul style="list-style-type: none"> - Rail trespassing - Railroad-roadway collisions - Delay - Roadway traffic affected when trains arrive at-grade crossing - Time in queue - Train noise, horn-sounding, and vibration in residential areas - Risk of hazardous materials releases - Stormwater flooding due to rail right-of-way location - Slow emergency evacuations during flooding 	<ul style="list-style-type: none"> - Structure construction duration disrupts railroad and roadway - On-going structure maintenance - Life-cycle repair/replacement of parts - Retaining walls used to minimize the right-of-way impacts - Affect existing utilities - Drainage issues - More impact to local businesses - Visible to local areas 	<ul style="list-style-type: none"> - Structure construction duration disrupts railroad and roadway - On-going structure maintenance - Life-cycle repair/replacement of parts - Retaining walls used to minimize the right-of-way impacts - Affect existing utilities - Drainage issues
Cost Considerations		
<ul style="list-style-type: none"> - Safety - Delay - Emissions - Vehicle operating cost - Warning devices - Crossing panels - Crossing maintenance 	<ul style="list-style-type: none"> - High design, construction, and structure cost 	<ul style="list-style-type: none"> - High design, construction, and structure cost

Different types of roadways are administered by different entities, such as the State, a municipality, or a county. The land use decisions made by the local jurisdiction a roadway is passing through will influence the functionality of that particular roadway. An example is the functionality of State Route 347, which is administered by ADOT. The functionality is very much dependent on the land use decisions made by Maricopa. Therefore, all jurisdictions responsible for transportation systems and land use planning should be aware of this particular relationship and adopt formal access management guidelines. These may be published as a separate document, contained in zoning codes, established in roadway planning and development procedures, or in some combination. The implementation of the guidelines or regulations should be a shared responsibility of both the planning and engineering

departments. The regulations should be approved by the jurisdiction's elected body and be readily available for use by developers, real estate agents, and the general public.

The guidelines presented in this section provide basic design criteria for the location, spacing, and geometric aspects of roads and driveways. The guidelines are intended for use in investment decisions by land developers, for site planning, and for facility design. Availability of the guidelines reduces project review and approval time, as well as assuring that adequate access is available to serve a proposed land use. Table 12 provides Minimum Access Spacing Standards. Medians should be implemented on both Principal Arterial types. Suggested Guidelines for spacing median openings are provided in Table 13.

TABLE 12. MINIMUM ACCESS SPACING STANDARDS

Roadway Category	Speed	Public Road Spacing	Private Direct Access	Private Access Spacing	Private Access Geometrics	Private Access Remarks
Express-ways	45 mph	0.5 mile	No	N/A	N/A	Allowed only when no other access is available.
	50-60 mph	0.75 mile				
	65 + mph	1 mile				
Regional Highways	35-45 mph	0.2 mile	Limited	Based on	Based on special	Allowed only when no other access is available.
	50-60 mph	0.5 mile	Limited	special	circumstances	
	65 + mph	1 mile	Limited	circumstances		
Rural Highways	35-45 mph	660 feet	Allowed	250 feet min.	Right turns allowed, turn lanes may be required.	One access per parcel, two large development when spacing standards can be met.
	50-60 mph	0.25 mile	Allowed	450 feet min.		
	65+ mph	0.50 mile	Allowed	1000 feet min.		
Principal Arterial I	50-55 mph	0.50 mile	Limited	600 feet min.	Right turns only allowed, turn lanes may be required.	Allowed only when no other access is available.
	60-70 mph	1 mile	Limited	1200 feet min.		
Principal Arterial II	35-45 mph	0.25 mile	Limited	250 feet min.	Right turns only allowed, turn lanes may be required.	Allowed only when no other access is available.
	45-55 mph	0.50 mile	Limited	450 feet min.		
Minor Arterials	35-45 mph	0.25 mile	Limited	250 feet min.	Right turns allowed, turn lanes may be required.	One access per parcel, two for large development when spacing standards can be met.
	50-55 mph	0.50 mile	Limited	450 feet min.		
Collector Roads	25-35 mph	660 feet	Allowed	150 feet min.	Right turns allowed, turn lanes may be required.	One per parcel
	40-45 mph	0.25 mile	Allowed	300 feet min.		

Source: Nevada Draft Access Management System and Standards

TABLE 13. GUIDELINES FOR SPACING MEDIAN OPENINGS

Street Functional Classification	Spacing of Median Openings (feet)		
	Urban	Suburban	Rural
Arterial	660	660	1,320
Collector	330	660	1,320

Source: City of Tucson: Access Management Guidelines for the City of Tucson

RECOMMENDED DRIVEWAY SPACING PRACTICE

Access management practices include driveway spacing minimums for major arterial, minor arterial, and collector streets. These standards include all functional classification system roadways as defined by this Plan. General guidelines for spacing driveways based on speed are provided in Table 14.

TABLE 14. PROPOSED SPACING FOR DRIVEWAYS

85th Percentile Speed (mph)	Minimum Separation (feet)
25	150
30	200
35	250
40	300
45	350
50	450
55	600
60	800
65	1,000
70	1,200

Source: Nevada Draft Access Management System and Standards

In addition, a new driveway or a driveway with changed access should not be allowed under the following conditions:

- Within 10 feet of any commercial property line, except when it is a joint-use driveway serving two abutting commercial properties and access agreements have been exchanged and recorded by the two abutting property owners.
- Within 25 feet of a guardrail ending.
- Within 100 feet of a bridge or other structure, except canal service roads.
- Within the minimum spacing as established in this section.

- When adequate sight distance cannot be provided for vehicles on the driveway attempting to access the street, since those movements will be prohibited.
- When the nearest edge of any driveway flare or radius must be at least 2 feet from the nearest projection of a fire hydrant, utility pole, drop inlet and/or appurtenances, traffic signal, or light standards.
- For parking or loading areas that require backing maneuvers in a public right-of-way, except for single-family or duplex residential uses on local roads.
- If a property has frontage on more than one street, access will be permitted only on those street frontages where standards contained in this manual and other City Regulations can be met.
- If any access point meeting these standards cannot serve a property, the City may designate one or more access point(s). This designation can be based on traffic safety, operational needs, and conformance to as many of the requirements in these guidelines as possible. This does not constitute a guarantee by the City to provide access to a property.
- Exceptions may be made by the City in cases where the application of these standards would create an undue hardship to the abutting property owners and good traffic engineering practice can be maintained.

DRIVEWAY LOCATION COORDINATION

The location of access for properties on opposite sides of the highway shall be coordinated so that they do not interfere with each other.

- Driveways should be located directly opposite each other to ensure that they share a single access location.
- Where lots are not large enough to allow accesses on opposite sides of the street to be aligned, the center of driveways not in alignment will normally be offset a minimum of 150 feet on all collector roads, and 330 feet on all industrial, major, and arterial roads. Greater distances may be required if left turn storage lanes require them.
- Joint access will be required for two adjacent developments where a proposed new access will not meet the spacing requirements set forth in this section. Casa Grande must approve joint access.

8. RECOMMENDATIONS AND IMPLEMENTATION STRATEGIES

This final chapter of the report summarizes the major findings of the Small Area Transportation Study and provides recommendations and strategies implementing options to meet the future travel demand. The chapter also discusses funding sources and projected amounts of funding. In addition, the implementation experience of Arizona peer cities is provided as information for the City as it implements the transportation plan.

FINDINGS AND RECOMMENDATIONS

Public Participation

Findings The public and area stakeholders identified a clear vision for the development of the transportation system in the City of Maricopa.

Recommendations Implement the various pieces of the transportation plan to arrive at the outlined vision.

Traffic Growth and Circulation

Findings The City of Maricopa is growing at a very rapid rate: from 1,482 residents in 2000 to approximately 12,000 in May of 2005. This strong growth is supported by the 550 to 600 building permits issued by the City in the early months of 2005.

The City is expected to have 64,000 homes by the year 2020, a population of approximately 179,000 residents.

Traffic volumes within the City will increase significantly with the rapid growth.

The City of Maricopa arterial system, as planned with the approved development, is an incomplete arterial system with disconnected arterial links throughout the system and four lane streets. As a result, the arterial system will be highly congested by the year 2020.

Internal traffic circulation as well as emergency access is constrained by limited bridge crosses of the major washes.

Recommendations To alleviate congestion within the City as traffic grows, the arterial street system as currently planned needs to be built out at a higher capacity.

New arterial links are needed to improve connectivity and continuity of the street system.

New wash crossings must be constructed to improve circulation and emergency access.

Review development plans.

Implement the street plan as defined, including:

- Preserve and acquire Right-of-Way for the arterial roadways
- Design and construct needed roadways according to the established time frames
- Construct needed bridges and railroad crossings
- Review development plans and apply principles of connectivity, and access management to arterial and collector roadways

Regional Connections

Findings

The existing regional connections of SR 347, SR 238, and Maricopa Casa Grade Highway are inadequate to provide interregional connections from Maricopa to the Phoenix Metropolitan area, Tucson Metropolitan area, City of Casa Grande, and other areas.

Existing regional facilities need be upgraded to improve regional mobility and safety such as the improvement of I-10/Queen Creek Road interchange and SR 347/Riggs Road intersection.

Recommendations

In addition to an expanded arterial system, new regional connections must be constructed to alleviate congestion on the existing regional highways.

The City must work very closely with ADOT, Pinal County, City of Casa Grande, GRIC, Ak-Chin Reservation, Maricopa Association of Governments, Pima Association of Governments, and other agencies to facilitate the planning and construction of new regional road connections.

Delay at Railroad Crossings

Findings

Traffic experiences long delays at the existing crossing of SR 347 with the UPRR tracks. Approximately 55 freight trains per day move through the crossing and the three AMTRAK passenger trains stop at the depot per day. Delay will significantly increase with increased traffic as well as the expected increase in the number of freight trains.

Limited railroad crossings exist on other north-south streets and existing crossings are underdeveloped. As development fills in on both the north and south sides of the railroad tracks and traffic volumes increase, delay will also increase.

Recommendations

An overpass or underpass is currently needed at the SR 347/UPRR crossing to reduce delay and improve safety. ADOT, in cooperation with the City, initiate a design concept report on a grade-separated railroad crossing on SR 347.

New overpasses or underpasses will need to be constructed on various north-south arterial streets.

Multimodal and Transit

Findings

The city will need a mix of transportation modes in order meet travel demand.

Some Arizona cities similar in size to Maricopa's current population provide regular transit service.

Other larger Arizona cities similar in size to Maricopa's projected population, provide fixed-route and dial-a-ride service. The City of Tempe provides regular bus service and is a close peer to the projected 2020 structure of Maricopa.

Potential alternative mode services for Maricopa include car pools and van pools, commuter bus service, future express bus and commuter rail services, and local area circulators.

As the City grows, opportunities will exist for the establishment of special needs services for seniors and mobility-limited persons and ride-sharing programs.

The future of Amtrak service in Maricopa is uncertain.

The estimated density of the Maricopa study area will meet or exceed a "Bus-minimum service" threshold by 2017.

Recommendations

The City should appoint a transportation coordinator and initiate a transit study in the near term.

Alternative transportation options should be implemented including carpooling, park-and-a ride lots, local and regional bus service.

Bicycle and pedestrian plans should also be initiated to complement the other transportation modes.

Coordination and Regional Planning

Findings

The City has been coordinating with local and regional stakeholders. However, this coordination has generally been informal and conducted on an as needed basis, rather than a regular formal basis.

The City public works and planning departments should establish an ongoing relationship with CAAG.

Maricopa will grow rapidly to 50,000 residents qualifying the City to be designated as a Metropolitan Planning Organization (MPO). In addition, surrounding growth in Casa Grande and in the County may reach the criteria for an MPO even earlier.

Recommendations Hold a regional summit to discuss the regional direction—economic development, infrastructure needs, institutional cooperation, financing. Include Maricopa, Casa Grande, Pinal County, GRIC, Ak-chin, Developers, Economic Development Organizations, Colleges and Universities, MAG, RPTA, CAAG, PAG, Maricopa County, and ADOT. The summit might be a one-day conference including panel discussions, presentations by MAG and Pinal County on growth, and breakout sessions to discuss issues and direction. The summit could result in an agreement among stakeholders to carryout ongoing coordination.

The City with regional partners should develop strategies for regional planning and eventual designation as an MPO.

Environmental Justice

Findings The 2000 census data indicated that within the City, approximately 50 percent of the residents were minorities and approximately 18 percent were below poverty level. The 2004 special census indicated that approximately 31 percent of the residents were Hispanic and Latino. The percent of mobility-limited persons was considerable higher than the State or County percentages.

Residents in these population groups were generally located in the older portions of the City.

The demographic composition of the City's population is changing with new development and the percentage of minority and low income residents is decreasing. However, it is expected these residents will remain in Maricopa.

Recommendations In developing infrastructure, the City must consider whether impacts are disproportionate on minority, low income, and disabled residents. Also, the transportation benefits to these individuals must be considered.

The implementation of transit service should also consider these minority, low income, and disabled residents.

Funding

Findings The estimated cost of street infrastructure required to meet the 2020 traffic demand is between \$200 and \$220 million. Maricopa will need significant transportation funds to develop and maintain the City's street system.

The City of Maricopa is eligible to apply for FTA Section 5311 formula grants so long as the City's population remains below 50,000.

Transit systems in cities in the population range projected for Maricopa in 2020 have an average of almost 2 million trips per year, and annual operating budgets in excess of \$5 million. Local match funding for transit in these cities averages \$1.74 million; the average cost per passenger carried is \$3.80.

Recommendations The City must aggressively pursue a wide variety of funding sources including, development impact fees, Pinal County ½ Cent Sales Tax, STP funds, Transportation enhancement funds, LTAF, HURF funds, regional funds from CAAG, and other funding sources.

The City should have special censuses conducted mid-decade to obtain accurate population numbers to ensure that the City is allocated its fair share of HURF funds, LTAF, and Pinal County funds.

The City should leverage its funding by using loan programs such as H.E.L.P where appropriate.

IMPLEMENTATION STRATEGIES

Challenges

Implementing the multimodal transportation infrastructure within the context of approved development plans presents several major challenges including the following:

- Right-of-way needs and right-of-way preservation for roadways
- Lead time needed to construct regional connections
- Cost of needed improvements and funding implications
- Prioritization of projects as development phases in
- Implementation of multimodal and transit projects

In order to meet these challenges, the following action plan has been developed to implement the study recommendations (see Table 15 and 16).

TABLE 15. IMPLEMENTATION ACTION PLAN

Implementation Strategy	Responsible Entities
Adopt the Maricopa Small Area Transportation Study	City Council
Adopt the recommended Street Functional Classification and Roadway Design Guidelines	City Council
Program the recommended transportation improvements into the Capital Program	City Public Works, City Council
Initiate Discussion with ADOT to Begin a DCR in the vicinity of SR 347/UPRR tracks	City Public Works
Convene a Regional Summit to discuss Growth and Transportation Issues	City Council, Pinal County, CAAG, ADOT
Establish a process to coordinate city land use and transportation decisions on a regular basis	City Public Works, City Planning
Conduct a Transit Feasibility Study	City Public Works, City Planning Pinal County, CAAG, ADOT
Establish a Transportation Coordinator	City Council
Coordinate with Casa Grande and Pinal County on Transportation Studies	City Public Works, City Planning
Initiate a City Bicycle and Pedestrian Plan	City Council
Implement the Street Functional Classifications and Roadway Design Guidelines for New Development	City Public Works
Coordinate with ADOT and Pinal County on a regular basis on multimodal transportation improvements	City Public Works, City Planning
Establish a Coordinated Driveway Permitting Process with ADOT	City Public Works, ADOT
Establish a process to coordinate transit services with private and public agencies	City Public Works, CAAG, ADOT
Monitor and update plan	City of Public Works, City Planning Pinal County, CAAG, ADOT

TABLE 16. IMPLEMENTATION ACTION PLAN - MULTIMODAL

Action	Responsibility	Time Frame
Appoint Transit Advisory Committee	Maricopa City Council/City of Maricopa Public Works Department/Transportation Advisory Committee	Near term
Review Transit Oriented Development Concepts and include in General Plan as appropriate	Maricopa City Council/City of Maricopa Public Works Department/Transit Advisory Committee	Near term
Draft Transit-related goals and objectives for inclusion in City's General Plan	Maricopa City Council/City of Maricopa Public Works Department/Transit Advisory Committee/Stakeholders	Near term
Follow Amtrak and regional transit developments	Maricopa City Council/City of Maricopa Public Works Department/Transit Advisory Committee	Near-term
Designate City Transportation Coordinator	Maricopa City Council/City of Maricopa Public Works Department	Mid-term
Begin Ridesharing Program Development	City Transportation Coordinator with input from Transit Advisory Committee	Mid-term
Follow evolution of area demographics and track requests for transit and related services	City Transportation Coordinator	Mid-term
Conduct transit feasibility studies and develop plans as thresholds approach	City Transportation Coordinator/Consultants	Long-term
Discuss transit service options with prospective service providers	City Transportation Coordinator and Public Works Department with input from Transit Advisory Board	Long-term
Work with ADOT to obtain FTA Section 5310, 5311, or 5307 funding and LTAF II funds as appropriate	Maricopa City Council/City of Maricopa Public Works Department	Long-term
Request Design Concept Proposals for Transit Center	City of Maricopa Public Works Department	Long-term
Request proposals for equipment and transit center construction	City of Maricopa Public Works Department	Long-term
Develop Transit Service Marketing	City Transportation Coordinator with input from Transit Advisory Board	Long-term
Implement Marketing Campaign Maricopa Transit Brochure Transit Information on Web On-vehicle Advertising Community Trades and Promotions	City Transportation Coordinator	Long-term
Order equipment and begin construction	City of Maricopa Public Works Department with input from City Transportation Coordinator, and Transit Advisory Committee	Long-term
Transit Center opens and service starts	City Transportation Coordinator with input from Transit Advisory Committee	Long-term

FUNDING

This section summarizes multimodal revenue sources and estimates that are applicable to the City of Maricopa, together with financial constraints and opportunities pertaining to needed roadway improvements. A detailed description of other available funding sources is provided in Appendix A.

Federal Funds

A number of funding mechanisms exists that could be used to fund multimodal improvements for Maricopa. These include a number of federal, state, regional and local sources, as shown in Table 17. The Federal government funds a variety of transportation programs, most applicable to Maricopa would be the Surface Transportation Program (STP) funds. Arizona receives about \$142 million in STP funds per year. These funds can be used on state highways or for bridge rehabilitation, transportation enhancements, and safety projects. Maricopa would work through ADOT and CAAG to utilize STP funds.

Arizona State Shared Revenue

Highway User Revenue Fund (HURF)

One of the main sources of State transportation funds are derived from the Highway User Revenue Fund. These funds are comprised of gasoline taxes, use fuel tax, motor carrier fees, vehicle license taxes, and other registration fees. The estimated revenue for HURF in 2005 is over \$1.2 billion dollars. HURF funds are allocated through ADOT and distributed as an entitlement to cities, towns, and counties based on population. The City of Maricopa received \$129,640 of HURF funds in 2004. As the population of Maricopa increases the proportion of HURF funds for the City are expected to increase as well.

Local Transportation Assistance Fund (LTAF I and LTAF II)

Other State funding programs include LTAF I, which is funded by Arizona Lottery receipts other than PowerBall, and LTAF II, which is funded by PowerBall receipts. These funds are also distributed based on population. Larger cities, those over 300,000, must use LTAF I revenue for public transit; smaller communities can use the funds for other transportation projects. Maricopa received about \$12,000 from LTAF I in 2004. LTAF II monies must be used for transit by nearly all jurisdictions. The State also administers Federal transit funding within the Section 5311 and 5310 programs. These programs provide for small urban and rural transit services as well as special needs transit services.

TABLE 17. FUNDING MATRIX

Fund Name	Description	Eligible Uses	Timing*	Application Process	Sample Project
Federal					
STP	Federal funds, administered by FHWA and ADOT	Variety of capital projects including highways, bridges, transit and enhancement projects	L	Programmed and distributed through CAAG and ADOT District	State Highway 347
Bridge Replacement and Rehabilitation	Federal funds, administered by FHWA and ADOT	Used for bridge replacement or rehabilitation for eligible bridges located on public roads	L	Programmed through ADOT	Santa Cruz Bridge
FTA Section 5310 funds	Federal funds administered by ADOT	Local jurisdictions and private non-profit agencies	M/S	Programmed through ADOT Public Transportation Division	Mini-bus for Senior Center
FTA Section 5311 funds	Federal funds administered by ADOT	Used for rural transit services and communities of less than 50,000 population	M	Programmed through ADOT Public Transportation Division	Dial-A-Ride Services
FTA Section 5307 funds	Federal funds administered by ADOT	Transit service in cities with populations of more than 50,000	L	Programmed through ADOT Public Transportation Division	Deviated fixed route transit service
State					
HURF	State funds, derived from fuel tax and VLT, administered by ADOT	Nearly any capital project related to roadway improvements	M/S	Funds allocated to jurisdiction as proportion of population	Improvements to Honeycutt Road
LTAF	State funds derived from lottery sales	General transportation improvements	M/S	Funds allocated to jurisdiction as proportion of population	Extension of Bowlin Road
LTAF II	State funds derived from PowerBall lottery sales	Used as local matching funds for FTA transit funds	M/S	Funds allocated to jurisdiction as proportion of population	Match 5311 funds for provision of dial-a-ride service
Local/Regional					
Pinal County Transportation Tax	½ cent sales tax dedicated to road improvements within Pinal County	General transportation improvements	S	Funds allocated to jurisdiction by proportion of population	City of Maricopa Roads
Impact Fees	Fee imposed by local jurisdiction on development on per unit basis	Used to fund a variety of infrastructure needs including transportation	S	Locally administered	City of Maricopa Roads
Development Stipulations	Requirements by developers to dedicate appropriate ROW and build streets adjacent to project	Benefits are derived by offsetting cost of acquiring ROW and building infrastructure	S	Locally administered	ROW dedication adjacent to Provence development

*L = 10-15 years, M = 5-10 years, S = 0-5 years

Regional and Local Funding Sources

Regional and local funding sources include an existing Pinal County transportation tax, which is up for voter renewal. Pinal County estimates this tax generates approximately \$10 million dollars per year (2005) and is distributed according to a population based formula:

1. Distribution to incorporated cities and towns is calculated by multiplying the total revenue by the factor of incorporated population/total population
2. Distribution to unincorporated areas is calculated by multiplying the total revenue by the factor of unincorporated population/total population
3. Distribution to individual city or town: distribution to incorporated cities and towns multiplied by the factor of individual city/total incorporated population
4. Distribution to Supervisory district is calculated by multiplying the distribution to unincorporated areas by the factor of supervisory district population/total rural population

Using a 2005 population for Pinal County of 218,285, an incorporated population of 145,682, and a population of 4,855 in the City of Maricopa the distribution formula can be applied in the following way (steps 1 and 3):

Distribution to incorporated cities and towns:

$$\$10,000,000 \times (145,682/218,285) = \$6,673,935$$

Share of City of Maricopa population of incorporated population:

$$4,855/145,682 = 3.3\%$$

City of Maricopa allocation:

$$3.3\% \times \$6,673,935 = \$222,416 \text{ or } \$46 \text{ per resident}$$

This estimate is for general planning purposes only since actual distribution will vary with changes to revenue stream and changes in population. The extension of the county tax is expected to generate \$1 billion over the next 20 years countywide. Because of Maricopa's rapid growth, its relative share of Pinal County's population will most likely increase; thereby, generating a larger allocation of the excise tax.

Development Impact Fees

The City of Maricopa is currently in the process of finalizing a Development Fee Study conducted by TischlerBise (City of Maricopa Development Fee Study, May 2005). According to the study:

“Development fees are one-time payments for public facilities based on the pro rata share of costs incurred for facilities needed to accommodate new development. Development fees relate only to capital facility expansions benefiting new development and are not to be utilized for rehabilitation efforts or operating expenses”.

Maricopa has contracted with the consultant to calculate development fees for the following categories of infrastructure: Parks & Recreation, Libraries, Public Safety, General Government, and Transportation.

Table 18 provides a schedule of the development fees for Maricopa. Development fees for residential development will be assessed per housing unit and nonresidential development fees will be assessed per thousand square feet of floor area.

TABLE 18. DRAFT SCHEDULE OF DEVELOPMENT FEES FOR MARICOPA

	<i>Parks & Recreation</i>	<i>Library</i>	<i>Public Safety</i>	<i>General Government</i>	<i>Transportation</i>	<i>TOTAL</i>
Residential (per unit)						
Single Family	\$303	\$436	\$140	\$674	\$3,623	\$5,176
Nonresidential (per square foot)						
Com / Shop Ctr 25,000 SF or less	N/A	N/A	\$0.35	\$0.79	\$9.20	\$10.34
Com / Shop Ctr 25,001-50,000 SF	N/A	N/A	\$0.32	\$0.69	\$8.53	\$9.55
Com / Shop Ctr 50,001-100,000 SF	N/A	N/A	\$0.28	\$0.60	\$7.47	\$8.35
Com / Shop Ctr 100,001-200,000 SF	N/A	N/A	\$0.24	\$0.53	\$6.46	\$7.23
Com / Shop Ctr over 200,000 SF	N/A	N/A	\$0.21	\$0.48	\$5.54	\$6.23
Office / Inst 10,000 SF or less	N/A	N/A	\$0.16	\$1.05	\$5.22	\$6.43
Office / Inst 10,001-25,000 SF	N/A	N/A	\$0.13	\$0.96	\$4.22	\$5.31
Office / Inst 25,001-50,000 SF	N/A	N/A	\$0.11	\$0.91	\$3.60	\$4.62
Office / Inst 50,001-100,000 SF	N/A	N/A	\$0.10	\$0.86	\$3.07	\$4.03
Office / Inst over 100,000 SF	N/A	N/A	\$0.08	\$0.81	\$2.61	\$3.50
Business Park	N/A	N/A	\$0.09	\$0.76	\$2.93	\$3.79
Light Industrial	N/A	N/A	\$0.05	\$0.55	\$1.60	\$2.20
Warehousing	N/A	N/A	\$0.04	\$0.31	\$1.14	\$1.49
Manufacturing	N/A	N/A	\$0.03	\$0.43	\$0.88	\$1.34

Source: City of Maricopa Development Fee Study, 2005

Transportation Cash Flow Analysis

The cash flow summary identified from the Development Fee study indicates total revenues for Transportation Improvements of \$239.1 million over the next six years beginning in July 2005. The basis for the anticipated growth in single family residences are the 600 building permits the City currently issues every month or 7,200 units annually. As presented in Table 19, annual revenues are estimated to be \$39,860,000 for a total of \$239,058,000 over six years.

**TABLE 19. DEVELOPMENT IMPACT FEES CASH FLOW ANALYSIS FISCAL
YEAR 2006 THROUGH 2011**

TRANSPORTATION								
	<i>Fiscal Year =></i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>Ave Annual</i>
IMPACT FEE REVENUES (\$1,000's)								
Single Family		\$26,086	\$26,086	\$26,086	\$26,086	\$26,086	\$26,086	\$26,086
Commercial		\$8,965	\$8,965	\$8,965	\$8,965	\$8,965	\$8,965	\$8,965
Office		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Institutional		\$4,003	\$4,003	\$4,003	\$4,004	\$4,003	\$3,900	\$3,986
Industrial/Flex		\$806	\$806	\$806	\$806	\$806	\$806	\$806
TOTAL REVENUE		\$39,860	\$39,860	\$39,860	\$39,861	\$39,860	\$39,757	\$39,843
CAPITAL COSTS (\$1,000's)								
Planned Arterial Improvements for New Growth		\$38,055	\$38,055	\$38,055	\$38,055	\$38,055	\$0	\$31,713
Planned Traffic Signals		\$620	\$620	\$620	\$620	\$620	\$0	\$517
Facilities		\$1,077	\$1,077	\$1,077	\$1,077	\$1,077	\$1,077	\$1,077
Vehicles & Equipment		\$102	\$102	\$102	\$102	\$102	\$0	\$85
Development Fee Study		\$6	\$6	\$6	\$6	\$6	\$6	\$6
TOTAL EXPENDITURES		\$39,860	\$39,860	\$39,860	\$39,860	\$39,860	\$1,083	\$33,397
Annual Surplus/(Deficit)		(\$0)	(\$0)	(\$0)	\$1	(\$0)	\$38,674	
Cumulative Surplus/(Deficit)		(\$0)	(\$1)	(\$1)	(\$0)	(\$1)	\$38,673	

Source: City of Maricopa Development Fee Study, 2005

REVENUE ESTIMATES

In March of 2005, the League of Arizona Cities and Towns published *State Shared Revenue*, an estimate of state shared revenue for each city and town for FY 2005-2006 based on Department of Transportation and Department of Revenue figures. The budget estimates include allocation of LTAF and HURF monies to each city. The numbers stated in the report indicate an average HURF allocation of \$65 per capita and \$5 per capita of LTAF funds to cities statewide. Applied to Maricopa, the City would receive, based on a population level of 100,000 residents (approximately \$500,000 in LTAF funds and \$6,500,000 in HURF monies annually). Figure 17 presents the per capita allocation of the major funding sources HURF, LTAF, and Pinal County Tax for Maricopa. The total allocation per capita is estimated to be \$116 annually. Figure 18 presents annual revenue estimates by population thresholds of approximately \$11.6 million, based on a City population of 100,000 residents.

Summary

The Development Fee Study anticipates even faster growth than the population projections developed for this transportation plan. Regardless, the City is facing major funding needs to provide the necessary infrastructure. Because of the particular development patterns and the rapid pace of development in Maricopa, the demand for transportation facilities is increasing rapidly. If adopted, the fee schedule, in addition to other funding sources available to the City, will provide initial funds to mitigate some of the arising accessibility and capacity problems identified. Table 20 summarizes the revenue estimates by population thresholds.

FIGURE 17. PER CAPITA SHARE OF MAJOR FUNDING SOURCES

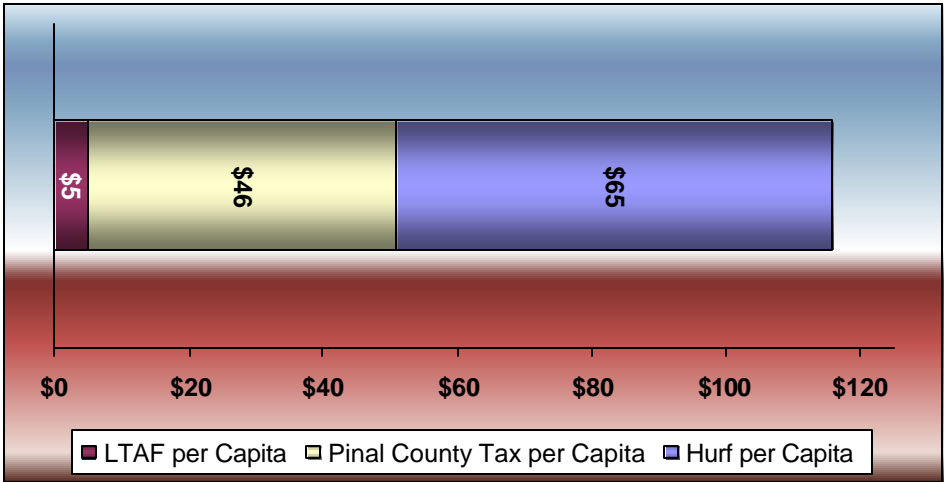


FIGURE 18. ANNUAL REVENUE ESTIMATE BY POPULATION THRESHOLD

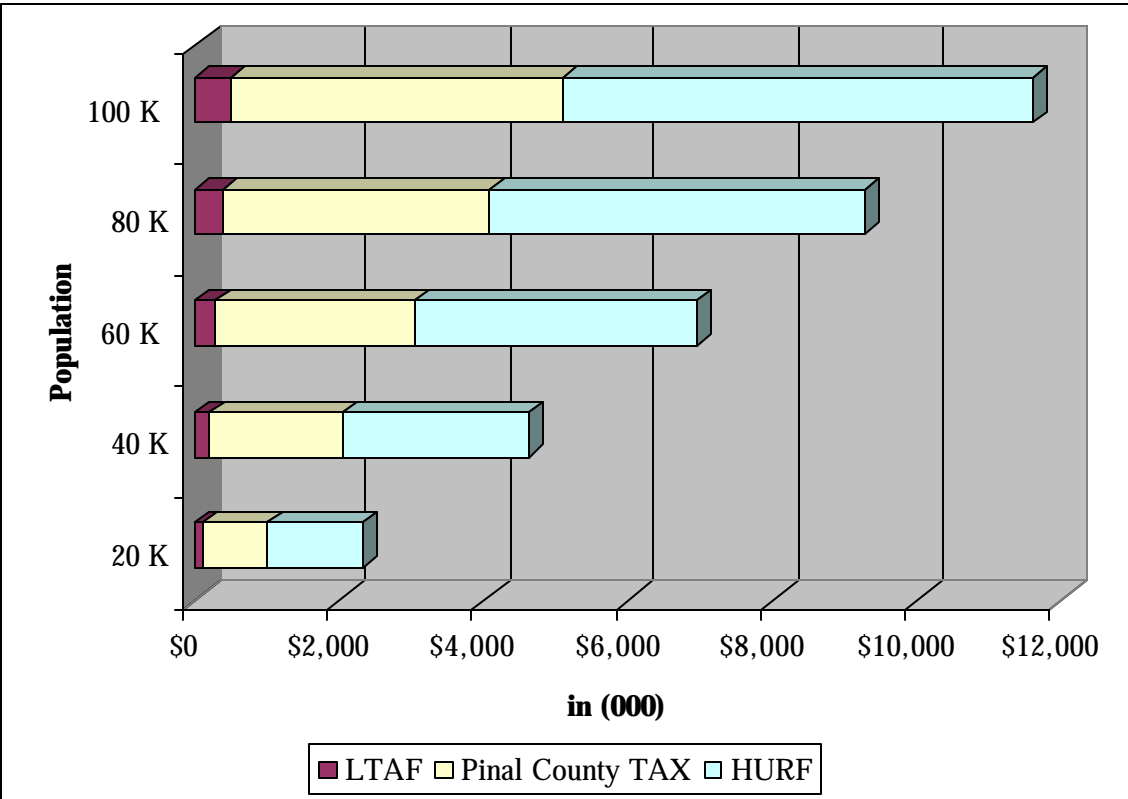


TABLE 20. REVENUE ESTIMATES BY POPULATION THRESHOLDS

Population Threshold	Type of Fund - Annual Allocation			Pinal County	
	Impact Fee	HURF	LTAF	Tax	Total
20,000	\$39,860,000	\$1,300,000	\$100,000	\$920,000	\$42,180,000
40,000	\$39,860,000	\$2,600,000	\$200,000	\$1,840,000	\$44,500,000
60,000	\$39,860,000	\$3,900,000	\$300,000	\$2,760,000	\$46,820,000
80,000	\$39,860,000	\$5,200,000	\$400,000	\$3,680,000	\$49,140,000
100,000	\$39,860,000	\$6,500,000	\$500,000	\$4,600,000	\$51,460,000

IMPLEMENTATION EXPERIENCE OF ARIZONA PEER CITIES

A review of other Arizona cities experiencing rapid growth provides insight into how these communities dealt with or are still dealing with providing transportation solutions. This review includes general descriptions of the peer communities, a description of their planning and funding approaches, and major lessons learned. The cities reviewed were chosen from those cities with the highest percent change in population between the Census 2000 and the Department of Economic Security (DES) 2004 estimates. The top twenty Arizona cities based on percent change in population are shown in Table 21.

TABLE 21. POPULATION OF PEER CITIES RANKED BY PERCENTAGE CHANGE

City		DES 2004 Estimate	Census 2000	Number Change	Percent Change
1	El Mirage	28,310	7,609	20,701	272.1%
2	Maricopa	4,855	1,482	3,373	227.6%
3	Sahuarita	9,715	3,242	6,473	199.7%
4	Queen Creek	11,360	4,316	7,044	163.2%
5	Surprise	63,960	30,848	33,112	107.3%
6	Goodyear	35,810	18,911	16,899	89.4%
7	Marana	23,520	13,556	9,964	73.5%
8	Buckeye	14,505	8,497	6,008	70.7%
9	Avondale	60,255	35,883	24,372	67.9%
10	Gilbert	164,685	109,697	54,988	50.1%
11	San Luis	21,180	15,322	5,858	38.2%
12	Youngtown	3,970	3,010	960	31.9%
13	Prescott Valley	30,590	23,535	7,055	30.0%
14	Oro Valley	38,280	29,700	8,580	28.9%
15	Taylor	3,980	3,176	804	25.3%
16	Chandler	220,705	176,581	44,124	25.0%
17	Lake Havasu City	52,205	41,938	10,267	24.5%
18	Casa Grande	31,315	25,224	6,091	24.1%
19	Colorado City	4,110	3,334	776	23.3%
20	Kingman	24,600	20,069	4,531	22.6%

For this review, six communities were chosen that face similar challenges as Maricopa. These included; El Mirage, Sahuarita, Queen Creek, Surprise, Marana, and Prescott Valley. Information about each community was compiled including the size and character, growth patterns, existing plans, transportation funding, and staffing. In addition, staff members were interviewed to help provide background and lessons learned by each community. Table 22 shows a comparison of these six rapid growth communities.

TABLE 22. COMPARISON OF RAPIDLY GROWING PEER CITIES

	City of Maricopa	El Mirage	Sahuarita	Queen Creek	Surprise	Marana	Prescott Valley
Population (2004)	4,855	28,310	9,715	11,360	63,960	23,520	30,590
Size (Sq. Miles)	29	11	30	35	74	120	31
Staff Size		-	93	-	404	260	209
City Budget (Mil)		-	30	47.3	50.5	16.9	85
Transportation Budget (Mil)	Under development	-	.900	1.9	6.1	-	13.5
Development/ Impact Fee	Under development	-	Yes	Yes	Yes	No	Yes
Local Sales Tax	Yes	-	Yes	Yes	Yes	Yes	Yes
Transportation Plan	Yes	-	Yes	No	No	No	No
General Plan	No	Yes	Yes	Yes	Yes	Yes	Yes
Miles of Streets	20-30*	-	-	-	540	139	-

* paved

City of El Mirage: The Department of Economic Security estimates the City of El Mirage grew 272 percent since 2000. El Mirage added over 20,000 people during this short time frame. Like Maricopa, agriculture has been the historical basis of El Mirage's economy. More recently, El Mirage has emerged as an intermodal transportation hub with a mix of manufacturing and auto related industries. The growth of El Mirage is linked to the development of the Loop 101 freeway which is four miles east of the City. The 101 provides connections to the entire valley with connections to all other major freeways. El Mirage, like Maricopa, has railroad lines crossing through parts of the City, and an incomplete roadway system. El Mirage has begun to address these issues in their General Plan, recommending the development of the road system, and improving connectivity within the City and to the greater region.

Town of Sahuarita is located 15 miles from Tucson in the Santa Cruz valley. Incorporated in 1994, Sahuarita has grown from about 2,000 people at that time to nearly 10,000 in 2004. Growth can be attributed to residential development including three master planned communities. The economy of Sahuarita is primarily retail, serving the large number of visitors to the Titan II Missile Museum. Many people also visit, interested in historic missions in the area as well as the nearby artist colony of Tubac. Many residents travel to Tucson or Green Valley for work as well. Circulation in Sahuarita is served primarily by I-19, SR19B, and a collection of existing disconnected roadways. Additionally, the Union Pacific railroad crosses through the City limits with numerous crossing and various spurs.

Town of Queen Creek is located in the far southeast part of Maricopa County, and is known for its rural atmosphere. Queen Creek grew by over 160 percent since 2000, adding over 7,000 residents. The town's economy is connected to the adjacent Williams Gateway Airport and ASU East. Queen Creek has seen a number of residential developments many of which are ranchettes or located on larger lots. Queen Creek faces similar transportation challenges as Maricopa. The current road system consists of two-lane roads and other unimproved roadways, the Union Pacific railroad bisects the community and two major washes cross the town. Queen Creek has begun to address these issues by planning to establish a roadway system that serves regional travel needs but protects neighborhoods.

City of Surprise is another edge community located in the far west part of the Phoenix metropolitan area. Surprise has grown from around 7,000 people in 1990 to an estimated 63,000 in 2004, with over 30,000 new residents arriving since 2000. Highly agricultural in the past, the economy of Surprise has evolved with more focus on construction and service sectors. Surprise is in the midst of expanding their street system and building a large water recharge project to meet the demands of their past and ongoing growth. Surprise is working towards connecting to the regional transportation system while developing local street networks. Served by major roads like SR 303 and Bell Road, Surprise must also coordinate traffic flow with large planned communities like Sun City West.

Marana A bedroom community just a mile north of Tucson, Marana grew by almost 74 percent between 2000 and 2004. Agriculture remains a large part of Marana's economy; however, commercial business is growing and industrial opportunities are available in an Industrial park and at the Marana Northwest Regional Airport. Growth can be attributed to Marana's location between Phoenix and Tucson and being located along I-10 and the Union Pacific Railroad. Marana has some unique circulation challenges with I-10 and the railroad basically bisecting the community. Much of the existing road network is located on the west side of I-10 with limited connections across I-10. Planned improvements include new or improved interchanges, improved arterial system, and protecting residential areas.

Town of Prescott Valley has grown from around 9,000 people in 1990 to over 30,000 people in 2004. Prescott Valley's economy includes industry, manufacturing, and retail services. The town has planned a new downtown, and is seeing the development of a regional shopping

center and several major road projects. The growth of Prescott Valley is in part thanks to its scenic location adjacent to national forest and many recreation opportunities. Prescott Valley, like Maricopa, is a fast growing community with a state highway serving as the main roadway and providing needed connections to a larger region. Prescott Valley is located between SR 69 and SR 89A, and is reliant on these routes operating successfully into the future.

Lessons Learned

Many of the fastest growing communities in Arizona face similar challenges as Maricopa. These communities are typically located on the edge of large urban areas and were in the recent past small agricultural areas. Growth has pushed out into these areas where developable land is readily available at lower cost. These fast growing communities must deal with the large influx of new residents, changes in the local economy, and providing services. In addition to developable land, another commonality between these areas is accessibility by a state highway or freeway. In many cases, the state highway is the main corridor within the community while also providing regional connections.

The population growth in these cities required local governments to grow as well. Larger populations demand more services including an improved circulation system. To fund improvements, a majority of these fast growing communities have used a combination of local sales tax, development/impact fees, highway user revenue funds, and other state funding. Communities located within the Phoenix region are part of the Maricopa Association of Governments (MAG), which serves as the Metropolitan Planning Organization (MPO) for the area. MAG provides another source of funding opportunities as well as planning and coordination expertise.

The City of Maricopa can benefit from experiences of other fast growing communities. These areas have transformed from small agricultural regions to bedroom communities while striving to diversify their economies and provided essential services. These communities have all created General Plans to help guide their growth, which include visions for improved transportation and circulation systems.

Developing funding sources that will grow with the population is also very important. Recently, the Maricopa City Council voted in support of the Pinal County transportation tax. This countywide tax is distributed throughout the County with Maricopa receiving a portion for roadway improvements. The amount Maricopa receives will likely increase as their population grows. Maricopa may want to investigate other funding sources as well, such as a local property tax, impact/development fees or becoming a member of MAG.

APPENDIX A. REVENUE SOURCES

This appendix presents an overview of sources of revenue for capital improvements, annual operating, and maintenance expenses for roadway and other modes on a statewide level. Federal Transportation Funds are introduced, followed by an overview of Arizona's Highway User Revenue Fund. The last section presents a summary of other available funding sources.

FEDERAL TRANSPORTATION FUNDS

Highway Trust Fund (HTF) is composed of the Highway Account and the Mass Transit Account, and is the source of funding for most of the programs in the Transportation Equity Act. Specific funding levels depend on how much revenue is generated for the Highway Trust Fund. Federal motor fuel taxes are the major source of income into the Highway Trust Fund. TEA-21 allocates funding based on four major goals: improving safety, rebuilding America's infrastructure, protecting our environment, and advancing research and technology.

Arizona has been allocated a total of \$1.57 billion between 2005 and 2007. The estimated funding levels for Arizona are summarized in Table A1 for Fiscal Years 2004 - 2005, 2005 - 2006, and 2006 - 2007. The distribution of these apportionments to Metropolitan Planning Organizations (MPOs) is also shown. Table A2 shows the detailed distribution of federal revenue sources for Fiscal 2004. Major funding categories of federal funds in TEA-21 include the following:

TABLE A1. ESTIMATED FEDERAL AID HIGHWAY APPORTIONMENTS AND ALLOCATION FOR ARIZONA (In Millions of Dollars)

Description	Estimated Apportionments		
	FY 04-05	FY 05-06	FY 06-07
Apportionments			
Interstate Maintenance	\$115.9	\$115.9	\$115.9
National Highway System	125.5	125.5	125.5
Surface Transportation	142.3	142.3	142.3
Bridge	14.3	14.3	14.3
Congestion Air Quality	41.5	41.5	41.5
Recreational Trails	1.2	1.2	1.2
Highway Planning and Research	10.4	10.4	10.4
Metro Planning	4.5	4.5	4.5
Minimum Guarantee	70.2	70.2	70.2
Subtotal	\$525.80	\$525.80	\$525.80
Apportionment Distribution by Entity			
MAG	84.1	84.1	84.1
PAG	16.3	16.3	16.3
ADOT	399.6	399.6	399.6
Optional Use by MAG, PAG, Other Locals	14.7	14.7	14.7
Other Locals	11.1	11.1	11.1
Subtotal	\$525.80	\$525.80	\$525.80
	Grand Total FY 05 - 07	\$1,577.4	

Source: Arizona Department of Transportation, *State Transportation Improvement Plan, 2005 - 2007*
Portion of State Transportation Funds are flexed to FTA for Transit projects Statewide

TABLE A2. FY 2004 ADOT REVENUE SOURCES - FEDERAL
(In Millions of Dollars)

Description	FY 04 Arizona Obligation Authority	FY 04 National Apportionments
Interstate Maintenance (IM)	\$113.6	\$5,174.7
National Highway System (NH)	\$123.0	\$6,401.2
Surface Transportation Program (STP)	\$111.5	\$7,516.2
Enhancement (TEA)	\$13.9	\$751.6
Safety (STP)	\$13.9	\$751.6
Bridge Program (BR)	\$14.0	\$4,445.8
Congestion Mitigation & Air Quality Program (CMAQ)	\$40.7	\$1,833.0
Planning & Research (SPR)	\$10.2	\$574.9
Metropolitan Planning	\$4.4	\$232.9
Minimum Guarantee	\$70.1	\$2,800.0
Recreation Trails	\$1.2	\$56.3
High Priority Projects	\$6.8	\$1,027.5
Re-Distribution (Appr Adj)	\$0.0	\$107.1
Indian Reservations	\$0.0	\$0.0
Public Lands Highways (Discretionary funds)	\$7.4	\$76.6
Safety Incentives (0.08 BAC)	\$1.4	\$80.6
FTA, Section 5310 (Transit)	\$1.6	\$90.4
FTA, Section 5311 (Transit)	\$3.3	\$243.7

Source: Arizona Department of Transportation, Financial Management Services, March 22, 2005

Surface Transportation Program (STP) is federal funds allocated to ADOT that may be programmed on any segment of the interstate system or state highway. Portions of this fund may also be used for bridge rehabilitation, transportation enhancements, and safety projects, such as hazard elimination and environmentally related activities. A new provision permits a portion (up to 15 percent) of funds reserved for rural areas to be spent on rural minor collectors. The total funding for the STP over the three fiscal years shown in Table 1 for Arizona is \$426.9 million. Arizona's allocation is based on the state's lane-miles of Federal-aid highways; total vehicle-miles traveled on those Federal-aid highways, and estimated contributions to the Highway Account of the HTF.

The National Highway System (NHS) funds are for improvement to the National Highway System which consists of an interconnected system of principal arterial routes which serve major population centers, international border crossings, airports, public transportation facilities, and other intermodal transportation facilities as well as major travel destinations. The NHS funding level for Arizona over the three fiscal years in shown Table 1 is \$376.5 million. Arizona's share is based the state's lane-miles of principal arterials (excluding Interstate), vehicle-miles traveled on those arterials, diesel fuel used on the state's highways, and per capita principal arterial lane-miles.

Interstate Maintenance (IM) funds are for reconstruction of bridges, interchanges, and over crossings along existing Interstate routes, acquisition of right-of-way, and preventative maintenance. These funds are not to be used for the construction of new travel lanes other than high occupancy vehicle lanes or auxiliary lanes. The IM funding level for Arizona over the three fiscal years shown in Table 1 is \$347.7 million. The allocation of these funds is based on the state's lane-miles of Interstate routes open to traffic, vehicle-miles traveled, and contributions to the Highway Account of the Highway Trust Fund attributable to commercial vehicles. TEA-21 provides flexibility to the State to use IM funds for reconstruction and to transfer surplus Interstate Construction funds to the NHS fund account.

Minimum Guarantee ensures that the State will have a guaranteed return -90.5%- on its contributions to the Highway Account of the Highway Trust Fund. Arizona's State Transportation Improvement Plan estimates the amount of \$210.6 million for Fiscal Years 2004 - 2007 for the Minimum Guarantee funding itself.

Congestion Mitigation & Air Quality (CMAQ) funds in the amount of \$124.5 million are allotted to Arizona between Fiscal Years 2004 and 2007 for projects likely to contribute to attainment of national ambient air quality standards and congestion mitigation. These funds are programmed for both freeway management projects, demand management projects, as well as other related air quality projects including bicycles facilities. Currently, CMAQ funds are only spent in Maricopa County.

Bridge Replacement and Rehabilitation funds in the amount of \$42.9 million are authorized for Arizona. This allotment can be used for bridge replacement or rehabilitation for eligible bridges located on any public road. The State has the option to transfer up to 50 percent of its bridge funds to NHS or STP funds.

The Hazard Elimination System (HES) is a program that was previously identified as the Candidate Locations for Operations and Safety Evaluations (CLOSE) program. The primary objective of the HES program is for reducing the number and severity of traffic crashes and decreasing the potential for crashes on state highways.

Authorized funding for the HES program is under Section 924 of the Highway Safety Improvement Program of Title 23 of U.S.C. 105(f), 152, 315, and 402; Section 203 of the Highway Safety Act of 1973, as amended; 49 CFR 1.48(b). The program is funded for the amount of \$50.5 million for FYs 2003-2007 based on the ADOT Five-Year Transportation Facilities Construction Program.

Most types of public surface transportation facility improvement may be approved for funding, provided that the sole purpose of the improvement is to substantially improve safety or to eliminate traffic hazards. However, improvements primarily for capacity enhancements with safety as a by-product will not be approved.

Federal Lands Highways (FLH) funds can be used for Indian Reservation Roads, Park Roads and Parkways, Public Lands Highways, and Refuge Roads. FLH funds also can be used for transit facilities within public lands, national parks, and Indian reservations. The funds can also be used as the State/local match for most types of Federal-aid highway funded projects.

Transportation Enhancement funds are one type of federal funds, which are available directly for local projects. These funds are set aside in order to add community or environmental value to a completed or ongoing transportation project. Currently, Arizona receives about \$13.9 million per year for transportation enhancement projects that are divided between ADOT and local government projects. The Arizona State Transportation Board retains fifty percent of the Transportation Enhancement funds for ADOT projects. The remaining enhancement funds are available for local projects recommended by the MPOs and rural councils of governments (COGs).

Metropolitan Planning Funds in Arizona are funded with \$13.5 million over the 3-year horizon. These funds are used to improve the planning process to meet metropolitan and State transportation needs.

Funds for the Recreation Trails Program were provided by the Federal Highway Administration in apportionments to the Recreational Trails Program, with an allocation of \$3.6 million over the next three years to Arizona. A state recreational trails advisory committee represents both motorized and non-motorized recreational trail users. The allocated funds are split into 30 percent for motorized use, 30 percent for non-motorized use, and 40 percent for diverse trails.

ARIZONA HIGHWAY USER REVENUE FUND

Monies from the Highway User Revenue Fund (HURF) are intended for the improvement of the State's highways and bridges. Once collected, the HURF revenues are distributed to ADOT, and in turn distributed as an entitlement share to cities, towns, and counties in proportion to population and to the Economic Strength Project Fund. HURF distributions may be used as debt service for revenue bond projects. The principal sources (see Table A3) of revenue include:

- Gasoline Taxes. Arizona's motor vehicle fuel tax of 18 cents per gallon is the largest source of revenue for HURF.
- Use Fuel Taxes. Use fuel taxes are taxes on diesel fuel and range between 18 cents per gallon for passenger cars to 26 cents per gallon for commercial trucks and buses. These taxes provide the third largest source of revenue.
- Motor Carrier Fees. These fees, based on the weight of the vehicle, are the smallest source of funding for HURF.
- Vehicle License Taxes (VLT). Vehicle license taxes are linked to the value of the vehicle being taxed and are the second largest source of funds for HURF. These VLT funds are the only one of the four major HURF revenue sources that are tied to inflation and increase as vehicle prices increase. In recent years, the VLT tax rate has been reduced to be more in line with that of neighboring states.
- Other fees include: motor vehicle registration fees, border crossing fees, and other miscellaneous fees.

TABLE A3. FY 2004 ADOT REVENUE SOURCES - STATE
(In Millions of Dollars)

Description	FY-04 Actual
Gasoline Tax	\$463.5
Use Fuel Tax	179.0
Motor Carrier Fee	34.6
Vehicle License Tax	312.3
Registration	146.6
Other	43.5
Total	\$1,179.50

Source: Arizona Department of Transportation, Financial Management Services, March 18, 2005

The HURF is the primary source for state highway funding and HURF funds are limited to highway use by the Arizona Constitution. Table A4 presents the HURF revenue forecast for FY 2005 - 2014. Table A5 presents the HURF distribution forecast for the same fiscal years and Table A6 shows the distribution of HURF funds to Cities, Counties, and towns in 2004.

TABLE A4. HIGHWAY USER REVENUE FUND REVENUE FORECAST
(In Millions of Dollars)

Fiscal Year	Gasoline	Use Fuel	Motor Carrier	VLT	Reg.	Other	HURF Total
2005	\$476.9	\$185.6	\$35.8	\$334.2	\$151.0	\$45.4	\$1,228.9
2006	498.6	198.7	38.8	363.0	156.2	47.8	1,303.1
2007	521.5	210.1	41.6	393.3	161.3	50.3	1,378.1
2008	540.5	215.7	40.8	424.2	169.6	52.6	1,443.4
2009	559.4	220.2	38.5	463.2	175.2	55.3	1,511.8
2010	573.9	226.5	41.1	494.9	180.3	57.7	1,574.4
2011	591.6	233.7	43.8	529.4	186.3	60.7	1,645.5
2012	607.4	240.5	46.6	566.2	191.2	63.5	1,715.4
2013	627.0	247.9	49.5	606.1	197.1	66.7	1,794.3
2014	642.8	254.8	52.6	648.7	202.9	69.9	1,871.7

Source: Arizona Department of Transportation, Financial Management Services, March 18, 2005.

TABLE A5. HIGHWAY USER REVENUE FUND DISTRIBUTION FORECAST
(In Millions of Dollars)

Fiscal Year	HURF	DPS/ESP	Net HURF	Forecast Distribution			
				ADOT 50.5%	Cities/Towns 27.5%	Cities 300k 3%	Counties 19%
2005	\$1,228.9	\$53.6	\$1,175.3	\$475.5	\$323.2	\$35.3	\$223.3
2006	1,303.1	11.0	1,292.1	652.5	355.3	38.8	245.5
2007	1,378.1	11.0	1,367.1	690.4	376.0	41.0	259.7
2008	1,443.4	11.0	1,432.4	723.4	393.9	43.0	272.2
2009	1,511.8	11.0	1,500.8	757.9	412.7	45.0	285.2
2010	1,574.4	11.0	1,563.4	789.5	429.9	46.9	297.0
2011	1,645.5	11.0	1,634.5	825.4	449.5	49.0	310.6
2012	1,715.4	11.0	1,704.4	860.7	468.7	51.1	323.8
2013	1,794.3	11.0	1,783.3	900.6	490.4	53.5	338.8
2014	1,871.7	11.0	1,860.7	939.7	511.7	55.8	353.5

Source: Arizona Department of Transportation, Financial Management Services, March 18, 2005.

Notes: FY 2005 HURF estimate based on August 2004 Forecast. ADOT 50.5% in FY 2005 is net of the \$118 million transferred to the state general fund per Laws 2004, Chapter 282 (SB 1413).

FY 2006-2014 HURF estimate based on November 2004 Official Forecast.

The DPS/ESP includes \$1 million for Economic Strength Project (ESP) each year.

The DPS transfers are \$52.2 million for FY 2005 per Laws 2004, Chapter 275 (SB 1402), and \$10 million in FY 2006 and thereafter. In FY 2005, there is also a \$0.4 million transfer to the Motor Vehicle Division for the registration compliance program.

FIGURE A6. ARIZONA HIGHWAY USER REVENUE FUND DISTRIBUTIONS TO CITIES, TOWNS, AND COUNTIES, FY2004

County	City	County	City
Pinal		11,515,102.88	
	Apache Junction		2,787,070.92
	Casa Grande		2,228,692.09
	Coolidge		687,962.47
	Eloy		916,576.15
	Florence		1,331,322.48
	Kearney		198,371.14
	Mammoth		155,109.42
	Superior		287,149.31
	Queen Creek		10,611.11
	Winkelman		197.98
	Maricopa		129,640.46

Fiscal Year 2003 – 2004 Totals

Cities: \$344,491,271.87

Counties: \$2214,601,120.27

Source: Arizona Department of Transportation, Financial Management Services, March 18, 2005

OTHER FUNDING SOURCES

Several other funding sources exist and are summarized below.

Local Transportation Assistance Fund (LTAF)

The LTAF is funded by the Arizona Lottery for use by cities and towns requesting the funds. The LTAF funds are allocated in proportion to the relative population of all Arizona cities and towns. Each requesting municipality is guaranteed a minimum of ten thousand dollars. Currently, \$23 million may be deposited in the LTAF from the State lottery fund each fiscal year. Cities and towns with a population of more than 300,000 persons must use LTAF funds for public transportation. In addition, up to 10 percent of funds may be used for the arts, or for disabled and handicapped assistance.

In 2000, the Arizona Legislature enacted the LTAF II program, with revenues derived from the Arizona's share of the multi-state Powerball lottery. These funds are apportioned in a manner similar to LTAF funds, except that any jurisdictions receiving more than \$2,500 in LTAF II funds are required to use all of the funds received for transit-related purposes including provision of local matching funds for FTA programs, operating funds, and transit planning. However, Powerball revenues have fluctuated widely and LTAF II has not proved to be a stable source of funding for operations.

Public Transit

The Federal Government funds transit capital and operating assistance programs for systems in designated urban areas. In some instances, the MPOs such as those in Flagstaff and Yuma, serve as conduits for this funding to local operators. However, larger cities including Phoenix and Tempe receive their funding directly. Two federal public transit programs administered by ADOT primarily fund Arizona's small urban and rural transit services. One is the Section 5311 program for general public service in rural areas. The other transit program is the Section 5310 program which funds vehicles for organizations providing specialized transportation services for the elderly or disabled.

Currently, the total funding in Arizona for general public systems in rural and small urban areas is approximately \$4.9 million annually.

Additional sources of revenue available for transit services include the following:

- Welfare to Work Act
- Older American Act Title III funds, Department of Economic Security
- Division of Developmental Disability funds
- Transportation funding through Medicaid administered through the Arizona Health Care Cost Containment System

- Head Start, Behavioral Health Funding
- Transit fares

A total of \$40 million in small urban and rural transit revenue is expected to be generated in the next decade.

Economic Strength Projects Fund

Local governments are eligible sponsors and co-sponsors of transportation projects financed by the Arizona Economic Strength Projects fund. This fund is sponsored by the Arizona Department of Commerce and funded by HURF. A local match must provide at least 10 percent of the project cost. The fund finances selected road projects that support economic development objectives.

Governor's Office of Highway Safety

Federal funds are allocated to finance state and local government highway safety projects. These program funds, in the form of reimbursable contracts, are administered by the Governor's Office of Highway Safety. Funds are provided under the National Highway Safety Act and funded through grants from the FHWA and the National Highway Traffic Safety Administration (NHSTA). The safety priority areas are listed below:

NHSTA Priority Program areas:

- Police traffic services
- Impaired driving
- Traffic records
- Pedestrian/bicycle safety
- Emergency medical services
- Occupant protection
- Motorcycle safety

FHWA Priority Program areas:

- Corridor safety improvement programs
- Safety studies of specific safety problems
- Outreach programs
- Rural and local technical assistance programs
- Pedestrian and bicycle safety
- Safety management systems

Pedestrian/Bicyclist Funding

Revenue sources for bicycle facilities primarily for transportation are available from the following sources:

- Federal funds are available to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway on the NHS.
- Federal Lands Highway Funds are available to construct bicycle facilities and pedestrian walkways in connection with roads, highways, and parkways. These funds are at the discretion of the department administering the funds.

Other funds for bicycle and pedestrian facilities are:

- National Recreational Trails Fund, which provides funds for recreational programs for bicyclists and pedestrians.
- Scenic Byways Program can fund bicycle facilities along highways.
- Federal Transit Funds can be used to provide bicycle and pedestrian access to transit facilities including shelters and bicycle parking facilities.

Another potential funding source for trails is the Heritage Fund. The Arizona State Parks Board Heritage Fund legislation stipulated the use of Arizona Lottery Fund revenues for trails. Eligible projects are trail land acquisition, design, engineering, development and renovation activities, and trail support facilities.

Community Development Block Grants

Community Development Block Grant (CDBG) is funds provided by the Federal Office of Housing and Urban Development. The CDBG funds can be used in the construction of capital improvement projects such as sewer, streets, water and wastewater treatment plants, housing, and parks that benefit low to medium income groups. Projects that alleviate slums or address an urgent need such as circumstances caused by a natural disaster can also use CDBG funds. For a transportation improvement to be eligible for CDBG funding, the project must be located in a census tract or block group with at least 51 percent of the population in the low and moderate-income group.

Regional and Local Funds

Several potential sources of additional funding exist on the local level. State law provides for the exaction of transportation excise taxes, which are subject to voter approval. Jurisdictions such as Maricopa County use these taxes to provide additional revenue for transportation projects. Other local funds could be collected through sales tax increases and the potential use of the Regional Road Area Fund.

Pinal County has an existing transportation tax approved by voters in 1986. This tax is due for renewal by the voters, with support from the Maricopa City Council. These monies are used for road preservation, construction, and dust abatement throughout Pinal County. District 3, which includes Maricopa, receives about \$1.2 million of these funds annually. As the population of Maricopa increases the allocation of these funds are expected to increase as well, as these funds are apportioned based on population.

Impact Fees, Right-of-Way, Facilities In-Lieu

Traffic impact fees, development impact fees, dedication of right-of-way, and/or construction of facilities in-lieu are additional local funding sources. The improvement of street network in Maricopa will require additional right-of-way. In order to acquire additional right-of-way in these areas, private developers should be asked to incorporate potential right-of-way into their plans. In addition, right-of-way exactions from developers should be sought through the coordination with location planning and zoning authorities.

REVENUE ESTIMATES

The 2001 *Governor's Transportation Vision 21 Task Force Report* estimated that \$41 billion from existing sources of transportation related revenue in Arizona will be received between 2000 and 2020. Of this amount, \$33,783.8 billion is roadway related, \$4,106.1 is derived from transit related sources, and \$3,164.3 from aviation. The comparison of needs and revenues is shown in Table A7.

TABLE A7. COMPARISON OF NEEDS AND REVENUES STATEWIDE
(In Millions of Constant 2000 Dollars)

Sources	Use	FY 2001- 2005	FY 2006- 2010	FY 2011- 2015	FY 2016- 2020	Total
Revenue From Existing Sources	Roadway	\$7,955.1	\$8,432.6	\$8,580.1	\$8,816.0	\$33,783.8
	Transit	\$1,133.3	\$1,050.9	\$986.8	\$935.1	\$4,106.1
	Aviation	\$846.7	\$795.5	\$771.0	\$751.1	\$3,164.3
	Total Revenue	\$9,935.1	\$10,279.0	\$10,337.9	\$10,502.3	\$41,054.3
Needs	Roadway	\$12,601.0	\$12,601.0	\$12,601.0	\$12,601.0	\$50,404.0
	Transit	\$1,705.0	\$1,705.0	\$1,705.0	\$1,705.0	\$6,820.0
	Aviation	\$1,027.8	\$1,027.8	\$1,027.8	\$1,027.8	\$4,111.0
	Total Needs	\$15,333.8	\$15,333.8	\$15,333.8	\$15,333.8	\$61,335.0
Additional Revenue Required to Meet Needs	Roadway	\$4,645.9	\$4,168.4	\$4,020.9	\$3,785.0	\$16,620.2
	Transit	\$571.7	\$654.1	\$718.2	\$769.9	\$2,713.9
	Aviation	\$181.0	\$232.3	\$256.8	\$276.6	\$946.7
	Total Additional Revenue Required	\$5,398.6	\$5,054.8	\$4,995.9	\$4,831.4	\$20,280.7

Source: *Revenue Consultant Report to Governor's Transportation Vision 21 Task Force*, Wilbur Smith Associates, November 2001

ADOT's Five-year Transportation Facilities Construction Program

Table A8 lists ADOT's *Five-year Transportation Facilities Construction Program* allocations for the five-year period covering Fiscal Years 2005 through 2009. For this period, ADOT has allocated a total of \$764 million for highway system preservation, \$2.7 billion for system improvements, and \$354 million for system management for a total of \$3.78 billion.

TABLE A8. ADOT FIVE-YEAR TRANSPORTATION FACILITIES CONSTRUCTION PROGRAM RESOURCE ALLOCATIONS
(In Thousands of Dollars)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
System Preservation	\$149,800	\$152,148	\$155,718	\$153,190	\$153,290	\$764,146
System Management	\$76,727	\$70,393	\$68,818	\$68,818	\$68,878	\$353,634
System Improvements	\$863,672	\$730,090	\$377,388	\$377,181	\$320,863	\$2,669,194
Total Resource Allocations	\$1,090,199	\$952,631	\$601,924	\$599,189	\$543,031	\$3,786,974

Source: Arizona Department of Transportation, *Five-year Transportation Facilities Construction Program*

The five-year program also includes an allocation for District minor projects that is used by the ADOT Districts for minor improvement projects such pavement widening, shoulders, guardrail, drainage improvements, intersection improvements, and other minor improvements. The total five year allocation in the FY 2005 – 2009 Program for District minor projects is approximately \$104 million, approximately \$10 million per District.

Funding for Railroad Crossing Improvements

The Utility and Engineering Services Section of ADOT has developed criteria for prioritizing the expenditure of funds for the construction of new highway-rail crossings, the improvement of existing crossings, or the construction of grade separated facilities. Federal funds are provided for these purposes through Title 23 United States Code, Section 130 (Section 130 Funds) and also in the Transportation Equity Act for the 21st Century (TEA-21). The intent of allocating these funds is expressly for the purpose of reducing or eliminating the hazards represented by the crossings. The funds are allocated on a 90/10 basis, with the federal share being 90 percent and a 10 percent match provided by the local jurisdiction or the railroad. In some cases the Federal Government will pay 100 percent of the cost. ADOT administers the Section 130 Funds in Arizona provided by the FHWA.